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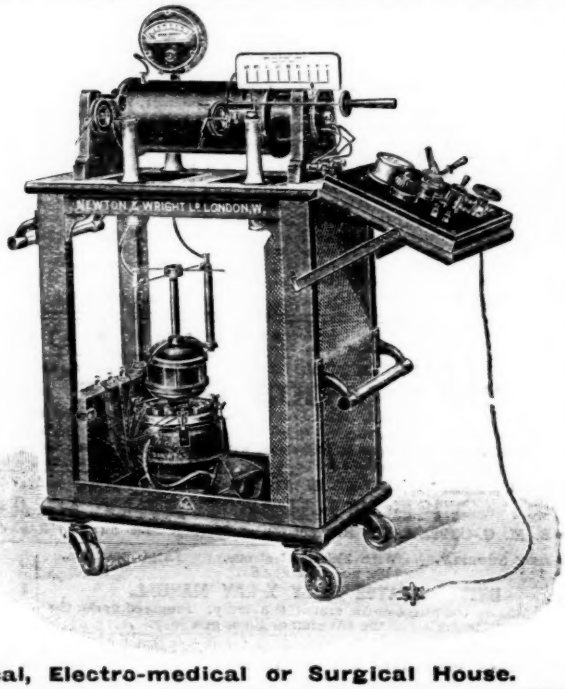

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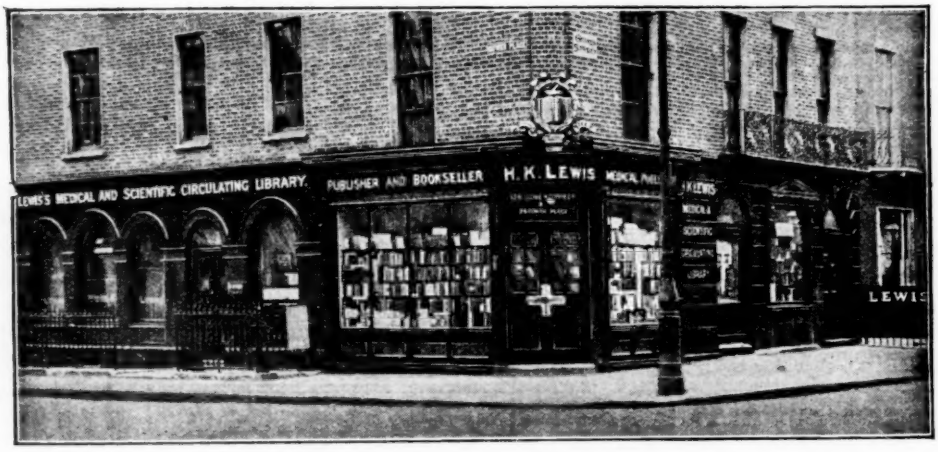

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INJURIES WITHOUT FRACTURES.

In injuries without fracture the whole track can usually be excised *en bloc* and the question of immediate or delayed suture will depend upon whether the case can be retained for at least 7 to 10 days, or must be evacuated forthwith. When suture is performed an attempt should be made to restore the functional anatomy of the limb, torn muscles being united or grafted into others of the same group, intermuscular compartments and tendon sheaths restored where possible, and particular attention given to repair of the deep fascia. Where careful previous examination is possible, it will usually be evident which nerves are out of action, and these should be traced and united wherever the injury permits. Even should the wound pursue a septic course union of divided nerves will prevent retraction, greatly facilitating later reparative operations.

In many injuries by either shell or bullet, entrance and exit wounds are small in comparison with the extensive muscular damage, calling for very careful and extensive excision. Extensive muscular hæmatomata, or even a diffuse infiltration of the whole limb with blood may be found. All such blood-clot should be carefully turned out, and if the actual bleeding point cannot be tied, as, for example, occasionally in the upper forearm, the main vessel should be ligatured above, sufficiently high to control the bleeding. Both artery and vein should be tied, since, as Sir George Makins has pointed out, gangrene is more likely to follow ligature of the artery alone than ligature of both vessels. In such cases closure of the wound should be delayed for at least 48 hours, or until the danger of a sudden acute infection is past, and the limb must be kept thoroughly warm, particularly if immobilised in a Thomas splint. If the wounds are at all extensive the limb should be splinted as carefully as if a fracture were present.

There is the vexed question as to whether any antiseptic substance should or should not be left in the wound after excision. In these early excisions there seems little doubt that an almost similar percentage of successes can be claimed by surgeons using different antiseptics or none at all. Where primary suture is practised, heat, either in the form of fomentations or as electric or hot-air baths, is of value. The process of repair tends to be somewhat sluggish, and sutures should be left in place at least 12 to 14 days, as otherwise troublesome gaping is likely to occur on their removal. Temperatures of 101°, or even 102° or 103° F., are not at all uncommon after successful excisions, and the pulse-rate and the local symptoms of the wound form the only reliable guide to interference.

WOUNDS COMPLICATED BY FRACTURES.

If these cases can be operated on sufficiently early as great a proportion of success can be hoped for from excision and suture as in wounds of the soft parts alone. The same general principles apply, though it is usually impossible in cases of fracture to excise the whole wound *en bloc*.

In the upper limb a more radical removal of bone fragments is justifiable than in the case of the lower limb. The French surgeons practise a most extensive removal of all loose or even partially loose fragments in their "débridement" operations, while the tendency of English surgery is to leave any fragment which may possibly live *in situ*. In most fractures of the upper limb a middle course is perhaps best, but all completely loose fragments should usually be removed, since not only are the chances of primary union improved thereby, but the formation of an involucrum is avoided, which in the forearm or hand is often very disabling. An exception should be made in the case of fragments bearing a portion of an articular surface, since the disability attending their removal usually justifies the risk of their retention except in certain places to be mentioned later. The cleansing of the ends of the main fragments can generally be satisfactorily performed with a sharp spoon, though if there is no great loss of substance the removal of a thin layer from each end is perhaps safer.

Fracture of the Humerus.

This bone is particularly favourable for treatment on account of the comparative ease with which it can be reached and dealt with and the wide muscular excisions that can be performed, and partly on account of the rapidity with which it throws out callus even after very extensive loss of substance.

In fracture of the shaft, after excision has been performed, the limb has usually been put up in extension in a straight Thomas splint with swivel ring or in the suspension extension splint described later. If the straight splint is used the limb should be kept quiet in this for at least a fortnight, when gradual movement may be begun. In the upper third of the humerus, if excision has proved possible, position during transport has usually been best maintained in a Thomas splint without a swivel ring, and with the arm at right angles to the body.

Fractures of the lower end of the shaft are often very difficult to deal with, and in the later infected stages a good many cases are seen with very considerable disability from malposition. The almost invariable trouble is the forward tilting of the upper end of the lower fragment, which is accentuated by the straight Thomas splint in which they are often put up. Where excision and closure can be performed the most satisfactory result in such cases seems to be obtained by putting them up in extreme flexion, as for a separated epiphysis, and steadying the line of the bone by an acutely flexed internal or external angular splint with a long upper limb.

In all compound fractures of this bone the musculo-spiral group of muscles should be examined before operation if possible, and if apparent paralysis is present the nerve should be examined and repaired if necessary and feasible. Dorsi-flexion of the wrist must be maintained in any after-fixation, and if the nerve is found to be anatomically injured it is sometimes a good plan to maintain such dorsi-flexion during repair by excision of an elliptical portion of skin on the back of the hand followed by linear suture, as described by Sir Robert Jones in the treatment of infantile paralysis affecting the elbow flexors.

Fractures of the Forearm.

Where only one bone of the forearm is fractured free excision of the infected ends can usually be practised, and especial care should be taken to reconstitute as far as possible the contour of the bone to obviate troublesome adhesions of tendons. The middle third of the radius presents special difficulties, and unless the pronator radii teres can be made to act as a splint the attainment of anything like perfect position is often difficult or impossible.

In injuries to the upper end of the radius where the fracture involves the articular surface, as it so frequently does, it is often best to excise the head of the bone at the primary operation. If movement is begun early very good results can be obtained; a more conservative practice is often followed by considerable disability.

With fractures of *both bones*, particularly if loss of substance is at all extensive, there are often considerable

difficulties. In the first place, the numerous tendons prevent a satisfactory excision of the soft parts, while, as regards the bones, the maintenance of good position and the prevention of cross union, particularly where the fracture includes the radius in its middle third, is extremely difficult. Care should be taken to reconstitute as far as possible the mesial surfaces of the bones, and fragments projecting in this plane should be removed if they cannot be readjusted.

In forearm fractures that have been excised and where speedy transport is necessary a swivel-ring Thomas arm splint has been used with extension obtained by a glove glued to the hand, though where transport is not a necessity better position and earlier movement can be obtained by using the so-called suspension extension splint. Extreme supination must be kept up, and with a Thomas splint a convenient method is by a tennis ball placed in the palm and secured to the bars of the splint in the required position by threads sewn into its outer coat.

A tennis ball, or some form of wooden ball splint is also best used in fractured metacarpal bones, provided the palmar wound, if one exists, has proved capable of being closed.

Fractures of Phalanges.

The transverse and longitudinal arches of the hand—the former bony and ligamentous and the latter bony alone—have received far less attention than their importance deserves; in many cases of inefficient splinting of the hand, either for injuries elsewhere in the limb, or more particularly for fractured metacarpals, the condition of "flat hand" which results is very crippling. In such a hand not only is the opposing power diminished or absent through the loss of tension in the transverse arch but where the metacarpals have been improperly aligned the absent longitudinal bony arch throws the metacarpo-phalangeal line of joints backwards and puts the interossei at a great disadvantage in their action.

When phalanges are fractured even very extensive damage can be dealt with without amputation by careful surgery of the wound followed by adequate splinting, and fingers that before the lessons of the war had been learnt would have been lost, can be saved by careful conservative methods. It must not be forgotten that perfect resumption of all normal functions is the essential object, and that it is not sufficient to heal the wound or repair the bone unless the movements can be restored. Extension is readily maintained in the early stages by Sinclair's ball splint, with extension by means of a glued glove finger. In cases where this is impossible Sinclair's ingenious suggestion may be followed and traction obtained by boring a hole through the free end of the nail and using the nail for the transmission of the necessary pull.

WOUNDS OF JOINTS.

It is open to argument in many cases of compound fracture whether primary suture following excision is the best treatment, considering the grave results which may follow an imperfect toilet of the wound; but there can be little doubt that where joints are involved the chances of a perfect result which immediate cleansing and closure gives very greatly outweigh the risks. In these cases the temperature chart is often extremely misleading. A rise to 102° or 103° without any great increase in the pulse is common, and can be disregarded if the other signs and symptoms are satisfactory. Where the case is doing well the temperature will usually settle to within normal limits in two, three, or four days.

Shoulder-joint.

Injuries of the shoulder-joint, if uncomplicated by fracture, may usually be dealt with conservatively by washing out the joint and closing the capsule. As to the injection of such substances as ether, formalin, glycerine, &c. into the joint cavity, no very definite evidence exists that they are of any value provided the mechanical cleansing of the joint has been complete.

Where a fracture of the head of the humerus coexists with the joint injury sepsis is so liable to lurk behind in the cancellous tissue of the bone, and future painful adhesions are so likely to follow such an injury of the large articular surface of the head, that more radical treatment is often advisable. In practically all other joints in both the upper and the lower limb—except the radio-humeral joint—opinion has been gradually hardening against the performance of excision as a primary operation. In the case of the shoulder-joint the results of excision, on the whole, are extremely good. Where excision is performed a straight Thomas's splint without a swivel-ring, and with the arm abducted at right angles to the body, is probably the best for transport, while where the patient can be retained the system of slings mentioned later is satisfactory and allows of early movement.

Elbow-joint.

Open injuries to this joint are not common without concomitant fractures of the bones entering into its formation; but where they do occur they should be treated by thorough cleansing of the joint followed by suture. It is often not possible to reach the joint cavity satisfactorily through the original traumatic opening, and if such is the case the original track having been excised, the joint may be opened by a longitudinal excision over the head of the radius with the forearm prone, through which satisfactory lavage can be carried out. This method exposes the radio-ulnar joint, or can do, and damage to this important joint can be inspected and dealt with. Unless the injury has destroyed the greater part of the articular surfaces of the elbow-joint, it would seem best to limit interference as far as possible.

A set excision at this stage has practically nothing to recommend it. Every possible use should be made of the tendinous expansion of the triceps to reconstitute a shattered olecranon, and the continuity or otherwise of the ulnar nerve must be verified and dealt with. Where the injury to the articular surfaces renders it useless to hope for a movable joint, great care must be taken in putting up these cases. The forearm should always be supinated, and the angle at which the elbow is kept must depend largely on the patient's usual occupation. It is quite remarkable, however, how grave an injury is compatible with a subsequently movable joint, provided infection does not occur and the injury allows of early active movement vigorously maintained. In some cases where the olecranon is already separated and considerable articular damage exists it is possible to separate the injured surfaces with a flap of fat and fascia, and so secure a movable joint by means of a modified arthroplasty, particularly with injuries in the region of the capitellum. It would seem best where the head of the radius is badly damaged to excise it completely, and in all these cases the limb should be invariably kept in full supination and movements of pronation and supination begun as early as possible.

Wrist joint.

Wounds of this joint are usually accompanied by injury to the carpal bones, and the complexity of the synovial cavities renders thorough cleansing extremely difficult. Where the carpal injury is not too severe conservative surgery is sometimes possible, and the intercommunications of the synovial spaces are very readily shut off under the influence of injury or infection, so that if early vent is given to any remaining sepsis it is usually fairly easy to keep the process under control. Limited excisions of the carpal bones in response to the nature of the damage present give usually quite good results, provided attention is given to the position of the wrist afterwards. Dorsi-flexion must be maintained and ulnar deviation prevented; early and vigorous finger movement must be insisted on.

Where a thorough excision is not possible, and particularly when many of the tendons are divided, it is usually wiser not to aim at primary closure of the wound. In such cases a careful anatomical reconstruction of the divided structures, and as complete as possible a removal of dead tissue, followed by the application of such a tissue solvent as Dakin's fluid, will usually allow of early secondary closure. If such a case has to be left open, every effort should be made to avoid leaving a tendon or tendons running uncovered through the wound, as these will certainly die. When they cannot be incorporated in the walls of the wound, it is usually better to realise at once their inevitable death and to make as good a provision as is possible for the resumption of the function they subtend by such grafting or cross-unions as are necessary.

Metacarpo-phalangeal and Phalangeal Joints.

Injuries to these joints should be treated as conservatively as possible, and every attempt should be made to secure primary union; secondary sterilisation is a long and tedious process. Sinclair's ball splint is perhaps the best in the after-treatment of these cases, and the good splinting attachment permits of graduated and increasing movements.

Perhaps the most difficult problem for the surgeon in the early treatment of all these severe injuries is the decision as to when excision and suture should *not* be performed. He must be guided partly by the length of time since the infliction of the injury, partly by the anatomical possibilities of the wound, and partly by the nature of the infection present, if known. Gas-bacillus infection is not greatly to be feared where the main vessels are intact, since a wide excision of all dead or damaged tissues will prevent its development. Further, its presence is readily recognised by the indications present in the wound and by the character of the pulse and the temperament of the patient. The most dangerous infection possible in these cases is that caused by the hæmolytic streptococcus. Even with the most radical surgery the chances of success are extremely slender.

THE TREATMENT OF INFECTED WOUNDS.

Having now briefly reviewed some of the principles which underlie the early treatment of these severe injuries to the upper limb, it remains to consider the methods to be adopted when the case is seen too late for primary excision and suture or when this method has been tried but infection has developed. This second line of treatment represents mainly the work as performed in the base hospitals in France. Consequently, where we attempt to apply the lessons of the war to civil surgery it will usually be advisable to adopt, in conjunction with "first line" surgery, the splinting of the "second line."

Two sides of the subject have to be considered—namely, (1) the treatment of the wound itself; (2) the treatment of the part wounded; but each is the necessary corollary of the other. It is chiefly in the field of pure wound treatment during this infected stage that the great controversy of opinion and practice has been waged during the war.

There can be little doubt that the treatment most likely to provide practical success is that which most closely imitates Nature's own treatment or which exaggerates it to meet the aggravated conditions present, and it is in the interpretation of these processes that the experimental work of Sir Almroth Wright and his co-workers has been so valuable. Approximately, it may be said that when dealing with an infected wound the natural reaction of the body is to limit as rapidly as possible the depredations of the invading organisms by destroying the food on which they live, and at the same time to guard against their further invasion by setting up a strong zone of defence around the wound. The first purpose is accomplished by the liberation in the wound, from dead pus cells, of trypsin, which splits up the protein of the dead tissues and deprives the organisms of their necessary pabulum, since most organisms need, at any rate, polypeptides for their growth. The second is secured by the speedy construction of a band of leucocytic infiltration and, as a guard against the activity of the body's own agents, by an increase in the normal antitryptic activity of the serum.

It is thus seen that both in the pre-infected and in the infected stage of a wound the same general principles underlie its treatment—namely, the thorough removal of all dead or dying tissues—and that the sole difference consists in the fact that before bacterial spread has occurred the process can be carried out quickly by means of the knife, while at a later stage where the line between living and dying tissues is no longer distinct, the slower process of hydrolysis must be resorted to.

We have here, then, a natural line of wound treatment along which success is to be expected. In the neutral hypochlorite solution of Dakin and Daufresne we have a substance of very great proteolytic value. Experiments on the action of a 0·5 per cent. hypochlorite solution on coagulated albumin, gelatin, albumin in solution, and dead tissue showed that the solids were dissolved and the dissolved protein hydrolysed, the various stages of the formation of alkali, albumin, proteoses, peptones, and lower products being readily followed. The rapidity of the action is well seen by two experiments.

In the first, if a solution containing 5 per cent. egg-white and 0·5 per cent. hypochlorite is incubated for eight hours at body temperature, no protein, proteose, or peptones can be detected although all these substances are readily demonstrated during the course of the experiment.

In the second an artificial wound was constructed by placing a weighed piece of meat on a tray in a Petri dish under sterile conditions, the whole being kept moist and at body temperature. In one case two-hourly irrigation with two ounces of Dakin's solution was carried out and in another a similar procedure with normal saline. In each case a piece of meat weighing 1½ oz. was used, and the one irrigated with Dakin's solution was completely dissolved in 72 hours, while the one where saline was used was practically unaffected.

This all-important action of the hypochlorite solution is, of course, a purely chemical bulk action, and the amount to be used must be proportionate to the tissue to be dissolved, a fact which accounts for the apparent failure of Dakin's solution in Sir Almroth Wright's "artificial slough" experiment.

It would seem probable that along this line, the hydrolysis of dead tissues and the consequent secondary sterilisation of the wound, lies the most probable avenue for advance in the treatment of all infections. A great deal of work remains to be done, and whether further research shows ferment action or some form of chemical or bacterial hydrolysis to be the most successful, sufficient is already evident to establish the principle that the speediest way of dealing with an infection is to remove those substances in the medium which are essential for bacterial growth.

In the treatment of infected wounds, therefore, as regards the wound itself, Nature's tryptic digestion has been replaced by hypochlorite hydrolysis, the hypochlorite being introduced into the wound in the form of intermittent irrigation with Carrel's tubes. Dakin's fluid so employed is used *solely* for its hydrolytic power, and it is a coincidence, and perhaps an unfortunate one, that in a test-tube this fluid possessed a high so-called "bactericidal power."

The fact that a few seconds after its introduction into an actual septic wound suffices to destroy the hypochlorite as such, and the additional fact that organisms can be found growing on any isolated portions of dead tissue remaining in a wound which has been bathed in the solution, should be sufficient to vindicate it from any charge of antiseptic action *in vivo*, and prove, if proof is required, that its hydrolytic power is responsible for its undoubted success.

Nature's second method of dealing with an infected wound—namely, the establishment of a zone of leucocytic defence round the wound—is best aided by the maintenance of absolute rest and as perfect an alignment of parts as is possible, and further by a minimum of operative interference on the part of the surgeon while infection is active.

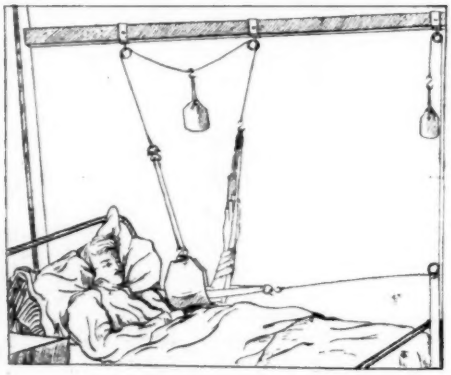
TREATMENT OF THE PART WOUNDED.

When splinting an injury of the upper limb at this stage, the question of transport need no longer limit the choice. The counterbalanced suspension method was used, and the fracture wards were fitted with permanent superstructure carrying adjustable cross-bars from which any splint can be suspended in counterbalance by means of cord, pulleys, and sand-bags. If the arm is extended by a running weight no movements of the patient can disturb the relative as opposed to the absolute position of the limb in its splint.

In deciding on the position of the limb two factors must be borne in mind: (1) the fractured bones must be brought into and maintained in as perfect a position as possible, and (2) the musculature of the limb must be held in the position which will best favour resumption of functional activity. Now the mechanics of the upper limb are rather altered by the fact that the human body is usually active in an upright position. With the body erect certain groups of muscles have, in addition to the act they are helping to perform, to overcome the weight due to gravity. There seems little doubt that this gravity effect is largely responsible for the so-called preponderance of certain groups of muscles, and its results are well seen in cases of infantile paralysis, where recovery is much more common in the gravity-aided muscles. Consequently, when putting the upper limb into its optimum repair position the gravity opposing muscles should be as far as possible kept shortened. The best position and a convenient one for wound treatment is as follows. The shoulder is abducted and flexed at right angles to the body, the arm is externally rotated, the forearm is flexed at right angles, and is kept in extreme supination, while the wrist-joint is extended and the fingers are held abducted and extended. This position has been used in most fractures of the humerus and bones of the forearm, except where unfavourable to correct bony alignment.

The Suspension Extension Splint.

The method employed is applied as follows. For example, in fracture of the shaft of the humerus Sinclair's glue is applied to the front and back of the forearm and gauze strips are fixed to it; a glove is glued to the hand, leaving thumb and fingers free. Further, gauze strips are glued to as great a surface of skin over the lower fragment as possible. A mackintosh sling is applied over the dressings round the fracture and is suspended by a cord which, running over two pulleys, has its other end attached to a hook. To this hook are fixed the



Suspension extension splint for treatment of upper-limb injuries in the optimum position for repair.

gauze strips from the forearm, also the strings from each glove finger, permitting suspension by either or both. The counterbalancing weight is fixed to the cord between the pulleys, and the gauze from over the lower fragment is fixed to a cord running over a pulley at the end of the bed, to which extension weight is attached. Supination is obtained by a torsion sling applied round the hand and running to the top or bottom of the bed.

In upper-arm wounds where the extent of skin involved proves too great for this method we have used an arm Thomas's splint, bent to a right angle, and with the angles of attachment of the ring altered to fit over point of shoulder. Extension is obtained by using the forearm as a lever. Gauze glued to the lower third of the forearm and fixed to the internal bar forms the fulcrum; gauze glued to upper third of forearm and pulled to the external bar forms the force, and so exerts traction in the line of the humerus. The optimum repair position is maintained, except for the absence of external rotation at the shoulder-joint.

Fractures of the forearm have usually been treated by the suspension extension method described for the humerus, with a sling from the seat of fracture to top of bed, which counteracts any tendency of the fracture to sag. Very extensive or very septic wounds have been treated for a time on a form of suspension extension tray, consisting of a metal tray with a drainage-pipe. A wooden upright, against which the upper arm rests, serves as a counter-extension. The wooden attachment runs forward under the tray and has at its end a pulley over which runs a cord, taking extension from lower forearm or fingers, according to situation of wound. In fractures of both bones a wooden side-piece with straps is added, so that the forearm can be treated in supination. The whole apparatus is counterbalanced in suspension. The drainage-tube is connected to a bottle at the side of the bed, avoiding any wetting.

In wounds of the carpus and lower third of the forearm this splint has also been used, usually with a wedge attachment to secure adequate dorsi-flexion of the wrist. Extension is obtained by glove fingers glued to the skin and run by a kind of wood gearing to one central pull, thus maintaining good position of the fingers and an equal distribution of strain.

INFECTED WOUNDS OF JOINTS.

In dealing with infected wounds of joints, whether or not complicated by fractures, a movable joint has been aimed at, and it is surprising in what severe injuries a certain amount of movement can be obtained. In the shoulder-joint, as mentioned before, excision is probably best if the head of the humerus is gravely injured, and if this operation is performed, the arm is put up abducted and flexed. In general, in infected joints in the upper limb, once drainage has been established and hypochlorite introduced the condition seems improved by movement. As a rule the limb has been so arranged that if ankylosis should occur, it should occur in the most desirable position, while movement round this optimum position as a mean has been encouraged.

In the *shoulder-joint* the arm and forearm have been suspended in mackintosh slings, counterbalanced by weights and pulleys, and if the balance is accurate, the patient is able to move his arm with the minimum of muscular effort.

In the *elbow-joint*, where arthrotomy has had to be performed, the vertical incision over the head of the radius has been used, which by a downward and inward extension will also serve to expose the radio-ulnar joint. These cases have been treated on a modification of the suspension extension tray, the tray being so slung that its position of rest is that in which ankylosis, if it should follow, is desired to occur. If this splint is carefully counterbalanced, or if the patient assists himself with his other hand, all the movements of the elbow can be carried out, without in any way interfering with the treatment of the wound.

In regard to the *wrist-joint*, cases of infection of this joint have been treated in dorsi-flexion and have been kept strictly immobilised, since the advantages of early movement do not compensate for the risks of spread of infection along tendon sheaths and communicating synovial spaces. In the *metacarpo-phalangeal* regions the same methods have been used as described in the early first line treatment.

SURGICAL TREATMENT.

As to the surgical treatment of these infected wounds the essential condition is that all pockets and portions of the wound must be made freely accessible to the irrigating fluid. Tho scissors should be freely used to remove any exposed tendinous expansion or intersections, as tendon tissue is very slowly hydrolysed and is very apt to keep up a slow and prolonged suppuration. In the early stages of acute sepsis the least possible manipulation of the limb in search of hidden or pocketed pus would seem best, as in the majority of cases, where immobilisation is good, a barrier will be created against any general spread of infection, and pus, if it is formed, will be local in site, and readily dealt with when the moment arrives.

Some form of bacteriological control should be instituted in these cases, and when what has been termed surgical sterility is reached, secondary suture may be carried out, with a large percentage of successful unions. All through the treatment of these cases attention to the wound must be paralleled by care that the restoration of function is encouraged by every possible means, and of such means early active movements are the most important. Fortunately there is a satisfactory guide to the extent to which movement can be carried out, in the pain which follows any excessive motion. If the limb has been arranged so that movement does not disturb its correct alignment, active movement can be safely encouraged in all cases within the limits to which pain forms a safe and certain guide.

I would like to express my great indebtedness to my colleagues Captain F. D. Saner and Captain O. G. Morgan for the readiness with which they have allowed me to use work which was jointly carried out.

Guy's Hospital.

THE War Emergency Fund has recently received donations of 50 guineas each from the Royal College of Physicians, London, and the Royal College of Surgeons, England.

THE LATE MR. G. B. MCCAUL, L.R.C.P. & S. EDIN.—The death is announced on Feb. 12th of Mr. G. B. McCaul, who for a considerable time was senior medical practitioner and senior justice of the city of Londonderry. He was in his eightieth year. A native of Newry, co. Down, Mr. McCaul went early in life to Londonderry. In 1869 he became L.R.C.P. & S. Edin., and settled down in practice in his adopted city, where he rapidly became one of the leading medical practitioners. He also took a prominent part in the civic life of Londonderry, entering the corporation in 1884, and he was specially interested in guiding the public health. He was most popular in every way and much esteemed as a medical doctor. One of his sons, Captain G. B. McCaul, M.D., R.A.M.C., has been awarded recently the Military Cross.

THE HYSTERICAL ELEMENT IN ORGANIC DISEASE AND INJURY OF THE CENTRAL NERVOUS SYSTEM.

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IT has long been recognised that hysterical symptoms may be grafted upon symptoms caused by organic disease. Our experience with soldiers during the past four years has led us to believe that this association is much more common than has generally been supposed. We would even go so far as to say that there are few symptoms caused by organic disease which are not liable to be aggravated and perpetuated by suggestion, so that it becomes necessary in almost every case of impaired function to look for an hysterical element which can be removed by psychotherapy.

We have often found that hysteria may account for a large proportion of the incapacity in a patient presenting such definite signs of organic disease that it might very easily have been presumed that the entire condition was organic. We are consequently now in the habit of testing every case, in which it is at all conceivable that an hysterical element is present, by the only means which can yield the necessary information—namely, by observing the effect of psychotherapy. No other means are available, as, on the one hand, organic physical signs do not exclude the possibility of hysterical symptoms being present and, on the other hand, our observations, as well as those of other investigators, have proved that the supposed stigmata of hysteria are not present until they have developed as a result of the unconscious suggestion of the observer, who may produce them in suggestible individuals suffering from organic disease just as easily as in those suffering from hysterical disorders.[1]

Disseminated Sclerosis.

It is not an uncommon occurrence to find an extensor plantar reflex, ankle clonus, exaggerated knee-jerk, and absent abdominal reflex in a patient who seeks advice for some early symptom of disseminated sclerosis, such as impaired vision or unsteadiness of the hands, in spite of the fact that no symptom of paraplegia is yet present. These physical signs are accepted as absolute proof that the disease has involved the pyramidal tracts, and experience shows that sooner or later the legs will become weak and that severe spastic paraplegia will ultimately develop. The conclusion to be drawn from these facts is that *signs of organic disease of the pyramidal tract may precede the onset of symptoms.*

Many patients, especially women, suffering from disseminated sclerosis have a peculiar state of mind, often erroneously called hysterical, one feature of which is an abnormal degree of suggestibility. It is not surprising, therefore, that hysterical symptoms—symptoms produced by suggestion and curable by psychotherapy—may develop. When the lesion to the pyramidal tracts in such a suggestible individual becomes sufficiently marked to cause some stiffness and weakness in the legs, the stiffness and weakness may give rise to the idea of paralysis, and hysterical paraplegia may rapidly appear. If the patient is seen at this stage it may be impossible to make an accurate diagnosis, for we are face to face with a case of hysterical paraplegia with all the physical signs of organic paraplegia, although only a very small proportion of the incapacity is a result of the organic lesion.

Such a patient may be given a rest cure, inunctions of mercury, injections of salvarsan, or one of the numerous other drugs which have from time to time been advocated for disseminated sclerosis by individual physicians, only to be rejected by others, who have employed them with less faith and therefore with less effect. The treatment, whatever its precise nature, is really a form of psychotherapy, and the hysterical paraplegia disappears, leaving behind the physical signs of organic paraplegia and the slight degree of weakness and stiffness, which were present before the onset of the hysterical symptoms.

This we believe to be the chief explanation of the occurrence of periods of more or less spontaneous improvement, which is such a characteristic feature of disseminated sclerosis. It applies equally to the improvement of other symptoms, such as amaurosis; the slight impairment of vision, which results from the earliest changes in the optic nerves, sometimes even before any change can be recognised in the discs, suggests a grave loss of vision to suggestible individuals, so that almost complete blindness may occur long before definite optic atrophy is present. The vision may greatly improve again either spontaneously or as the apparent result of some form of treatment, but really as a result of suggestion.

It is very common in disseminated sclerosis to obtain a history of temporary weakness of the legs or temporary blindness some months or even years before the true nature of the disease is finally recognised. The temporary symptoms have generally been regarded as hysterical, but the physician who sees the patient now for the first time is inclined to say that the old diagnosis was both incorrect and unjust, as the symptoms must really have been organic in origin and a part of the disease from which the patient is obviously suffering at the present time. The truth is that the early symptoms were probably to a great extent hysterical, having been suggested by the very slight incapacity caused by the organic disease. The hysterical element disappeared, leaving the slight organic element behind. The early diagnosis of hysteria, though only partially correct and in one sense unjust, was distinctly to the patient's advantage if it led the physician to employ psychotherapy, which would cause the rapid disappearance of the hysterical symptoms.

No satisfactory explanation has ever been offered which would adequately explain the remittent character of the symptoms of disseminated sclerosis if they were entirely organic in origin. It is quite possible that a period of rapid deterioration corresponds with the rapid development of new areas of disease in the central nervous system, and that such a period may be followed by another of much slower development of the disease, during which changes may occur in the rapidly formed areas of disease, which result in their contraction, so that nervous tissue which was originally thrown out of action by compression recovers its functions. This probably explains the temporary paresis of one or more of the external muscles of the eye, and some of the slighter variations in the degree of paralysis of the limbs and of the impairment of vision, but it is hardly conceivable that sufficient change should occur in the central nervous system to account for the conversion of complete paraplegia into very slight stiffness and weakness of the legs, or of total blindness into slightly indistinct vision. Our explanation also makes it easy to understand why spontaneous improvement occurs more often in females than in males, and in the neurotic than in less suggestible individuals.

These ideas are represented diagrammatically in Diagram I. The line A G[1] represents the gradual development of paraplegia in a case of disseminated sclerosis. When the time

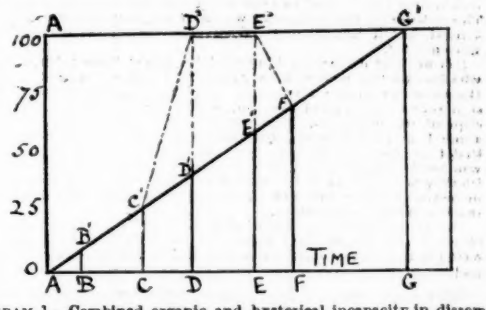

DIAGRAM 1.—Combined organic and hysterical incapacity in disseminated sclerosis. The vertical represents the degree of incapacity, the total height being 100 per cent. The horizontal represents time.

B is reached the degree of incapacity, B B[1], is still so slight that it remains unnoticed, but it is sufficient to produce physical signs. When the time C is reached a certain amount of stiffness and weakness is noticed, this being represented as C C[1]. This may continue to develop with the advancing disease until, at the point D, the incapacity is

$D D^1$. It is possible, however, that the slight impairment of function represented by $C C^1$ may suggest a further degree of incapacity, with the result that the patient becomes completely paraplegic. The total incapacity, $D D^2$, is then made up of an organic element, $D D^1$, together with an hysterical element, $D^1 D^2$. This condition of mixed organic and hysterical paraplegia may last until the point of time E, when, as a result of some counter-suggestion, the patient begins to improve and the hysterical symptoms eventually disappear, leaving him with the incapacity $F F^1$, which is somewhat greater than at the onset of the hysterical symptoms ($C C^1$), but very much less than the total incapacity. If the hysterical nature of the symptoms was at once recognised, the total incapacity $D D^2$ could have been reduced at a single sitting to $D D^1$.

Tabes.

We have shown how disease of the lateral columns produces physical signs before any symptoms have developed, and how the earliest symptoms may be exaggerated as a result of the development of hysterical paralysis on the top of the organic incapacity. Exactly analogous phenomena may occur in disease of the posterior columns. It is very common to find lost ankle-jerks with feeble or lost knee-jerks and some impairment in the vibration-sense over the bones of the legs[2] in patients who have sought advice on account of gastric or other crises, impaired vision, impotence, or disturbances in micturition, which are due to early tabes, but who have so far had no ataxy or other symptom which would indicate that the posterior columns are diseased. It is clear, therefore, that the physical signs of disease of the posterior columns, as well as of the lateral columns, precede the onset of symptoms.

Physical signs of organic disease of the central nervous system are thus qualitative and not quantitative.

We have seen numerous cases, in which much of the incapacity in a man obviously suffering from tabes was proved to be hysterical by its rapid disappearance with psychotherapy, the symptoms having been suggested to the patient by the slight incapacity which resulted from the actual organic disease. In addition to this auto-suggestion hetero-suggestion often plays a part, symptoms being unconsciously suggested by the medical officer in the course of his examination. It is, for example, very easy to suggest Romberg's sign, and we have now seen a number of cases in which a well-marked Romberg's sign was obviously hysterical. In some cases it was the only hysterical symptom present; in others, like the following reported by Lieutenant S. H. Wilkinson,[3] it was accompanied by hysterical paralysis, which had resulted from auto-suggestion.

Hysterical paraplegia and hysterical Romberg's sign in a man with tabes.—Driver B., aged 28, was blown up by a shell at Salonika on Jan. 19th, 1917. On regaining consciousness he found he was unable to walk. In spite of treatment with electricity, hypnosis, and massage at Malta he remained paraplegic. When admitted to Netley on Jan. 8th, 1918, the paraplegia was found to be hysterical, and he quickly learnt to walk normally. By Feb. 13th he was feeling well in every way and would have been sent to duty had it not been for the condition of his pupils. The right pupil was larger than the left; it was oval in outline and reacted neither to light nor accommodation. The outline of the left pupil was also slightly irregular and gave a typical Argyll Robertson reaction. The knee-jerks and ankle jerks were normal.

His medical officer, thinking that he might have tabes, asked him whether he had ever felt dizzy or likely to fall when closing his eyes. He answered in the affirmative, and on being tested for Romberg's sign gave a well-marked reaction, which became more marked at subsequent examinations. This was subsequently recognised as being anomalous, for the knee-jerks and ankle-jerks were normal, showing that there could not be any great loss of muscle-sense in the legs. It was concluded, therefore, that the Romberg's sign had been unintentionally produced in the course of examination. This view was confirmed when every trace of the sign disappeared two days later as a result of counter-suggestion.

The Wassermann reaction of the blood and cerebro-spinal fluid was strongly positive, so that there can be little doubt that the pupil changes were due to early tabes, although the tendon reflexes were normal.

The improvement in the gait of tabetic patients which results from the methods devised by Frenkel does not, in our opinion, always act solely by educating the patient to use his eyes to help his deficient muscle-sense, and to make the most of such muscle-sense as he still has. The results obtained are sometimes too rapid and too dramatic, and can scarcely be explained except as a result of suggestion, the incoördination being largely hysterical and the nature of the incapacity having been suggested by the slight degree of unsteadiness actually caused by the organic disease.

One of us (A. F. H.) in 1913 saw a man with all the physical signs of tabes who had been unable to walk for six years. He was brought in a chair to the Guy's Neurological Department at 9.30 A.M. After he had been examined he was told that he would probably learn to walk again if he carried out certain exercises which were shown to him. He continued to practise these, and by 12 o'clock he had improved to such an extent that he could walk the length of the room, and in a week he was walking about normally.

This was regarded at the time as a triumph of re-education of the deficient muscle-sense, but the re-education must really have been re-education of the patient's mind—in other words, psychotherapy; as, if the total inability to walk had been due entirely to organic changes in the cord, it is inconceivable that the little muscle-sense still present could have been re-educated to such an extent in a single morning after lying dormant for six years.

Friedreich's Ataxy.

We have not had the opportunity of investigating many cases of organic nervous disease during the war, as, except for those caused by syphilis, they are rare among soldiers. The following case under the care of Captain W. R. Reynell was a typical example of Friedreich's ataxy, and until recently we would have accepted all the symptoms as the result of the organic changes in the central nervous system without further discussion. We would have said that Friedreich's ataxy is one of those nervous diseases in which very little can be done, and that the patient could hope for no improvement, but would slowly and steadily get worse. We have no doubt that this opinion would have been shared by the vast majority of physicians.

So convinced have we become of the enormous importance of looking for an hysterical element, even in the most unlikely places, that Captain Reynell proceeded to treat the patient as if his incapacity was hysterical, although there was nothing in his mental or physical condition which gave any grounds for such an idea. The treatment was fully justified by the result, and instead of sending the patient home as a helpless cripple, he has now been discharged from the Army in a condition which will not prevent him from earning a living in some light occupation for a time, although, of course, the ultimate prognosis remains as hopeless as ever.

Hysterical ataxic paraplegia associated with Friedreich's ataxy.—Pte. B. two years ago gradually became unable to walk in the dark, but it was not until he was sent to France with a Labour Battalion in October, 1917, six months after joining the Army, that he had any difficulty in the daylight. He was stopped several times by the military police on suspicion of being drunk, as his gait was unsteady. After an attack of influenza in June, 1918, the ataxy was much exaggerated, and from this date he only went out in a bath-chair. The difficulty in walking then steadily increased up to the time of his admission to Seale Hayne Hospital on Oct. 12th, 1918.

Dr. W. H. Haupt informs us that the patient's father was a very heavy drinker and had infected his mother with syphilis, which had led to the perforation of her palate. His brother is a complete cripple and never leaves his home. Eight years ago his hands became unsteady and he had to give up his work. Dr. Haupt reports that he has kyphosis and lateral curvature of the spine, pes cavus, absent knee-jerks, extensor plantar reflexes, marked Romberg's sign, nystagmus, a peculiar hesitating, almost stuttering speech, and intention tremor. He is very emotional and laughs and cries at the least provocation. He is also very deaf. Dr. Haupt regards him as a typical case of Friedreich's ataxy.

Our patient's speech is slightly affected, and there are sudden changes of pitch, as in a voice that is breaking. On admission he could scarcely do anything owing to extreme incoördination, and he fell frequently when he tried to walk without assistance. He was very unsteady on standing, and he fell immediately he closed his eyes. There was a slight but definite kyphosis, and the plantar arches were abnormally high on both sides. The knee- and ankle-jerks are completely absent on both sides. The plantar reflexes are difficult to obtain, but appear to be extensor. When asked to pour water from a jug into a tumbler definite incoördination in the arm movements was well seen and much water was spilt. The Wassermann reaction was negative in the blood and cerebro-spinal fluid. A diagnosis of Friedreich's ataxy was made.

Treatment by persuasion and re-education was given, as it was suspected that the ataxic gait might be partly functional. He learnt to walk fairly well on the first day of treatment, and further improvement followed exercises practised for half an hour three times a day. A week after treatment was begun the gait was almost normal, and unsteadiness could only be detected when the patient changed his direction suddenly. The hands soon became so steady that he developed into a competent potter.

Injuries and Acute Diseases of Brain and Spinal Cord.

Just as the physical signs of an organic lesion of the pyramidal tract may precede the development of paralysis due to the lesion, and may be associated with hysterical paralysis, persisting after the cure of the latter by psychotherapy, so may these physical signs persist after recovery from organic paralysis and be associated with hysterical paralysis, which develops as the organic symptoms disappear.

Injuries and acute diseases of the brain and spinal cord may result in changes which are to a great extent evanescent. The vaso-motor disturbances and microscopical changes in the nerve cells, such as chromatolysis and eccentricity of the nuclei, disappear entirely; inflammatory exudation and œdema also disappear entirely or leave only a trivial amount of permanent damage, and even hæmorrhages are absorbed to a great extent, the initial changes being thus very much greater than the permanent results of the lesion. The initial changes may, however, be sufficient to block the transmission of nerve impulses and consequently to cause complete loss of function in the parts which receive their innervation from the affected portion of the nervous system. But the permanent results of the lesion may be so slight that no loss of function persists, although, corresponding with the converse conditions in disseminated sclerosis, the damage may be sufficient to give rise to the permanent presence of organic physical signs. This is seen, for example, in the hemiplegia and paraplegia following syphilitic endarteritis, which have been treated early and thoroughly, and in the spontaneous recovery in some cases of poliomyelitis.

In the majority of cases the gradual improvement in the actual lesion is accompanied by a corresponding functional improvement. Occasionally, however, especially among suggestible individuals, such as soldiers who are mentally and physically exhausted as a result of the stress and strain of active service, the patient may not realise that the lost functions are returning. The initial incapacity gives rise to the idea of permanent incapacity by auto-suggestion, often aided by the unconscious hetero-suggestion of the physician, and whilst a less suggestible man might recover the use of his paralysed limbs in a few days, the paralysis is perpetuated in the suggestible man by the development of an hysterical element, which has been produced by suggestion and which can be removed by psychotherapy. In such a case the paralysis remains complete, and although at first it is entirely organic in origin, the proportion of the organic to the hysterical element in its make-up becomes steadily less, and in some cases a stage is reached in which the incapacity is almost entirely hysterical and independent of structural change, although the latter may still be sufficient to give rise to physical signs. *A condition may thus occur which is primarily organic, but is ultimately hysterical. Everything of organic origin may disappear, or the residual lesion may be sufficient to produce organic physical signs without any loss of function, or both organic physical signs and some loss of function.*

These ideas can be represented diagrammatically in the same way as in the case of disseminated sclerosis. The total incapacity resulting from the original wound or disease steadily improves, and when the time C is reached recovery may be complete (Diagram 2) or partial (Diagrams 3 and 4).

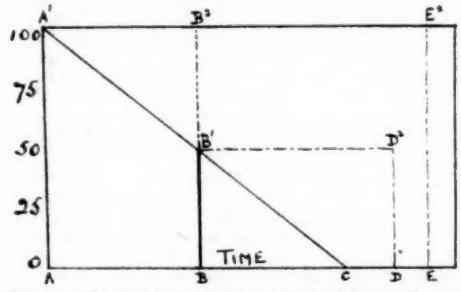

DIAGRAM 2.—Hysterical paralysis associated with organic paralysis, with complete recovery. In this and following diagrams A—A' represents the total incapacity resulting from the original wound or disease.

The partial recovery may leave no obvious physical incapacity, but it may, as in Diagram 3, leave sufficient residue to result in definite physical signs of organic disease, represented by C C'. In severer cases there may be some permanent incapacity, as represented by C C' in Diagram 4.

In each case the steady improvement of the organic condition may be masked by a simultaneous development of hysterical symptoms, so that at the moment B the incapacity may be partly organic (B B') and partly hysterical (B' B²). If psychotherapy is employed at this moment the improvement represented by B' B² takes place, the organic residue B B' remaining. If re-education is now constantly employed steady improvement will occur. During the period B C the symptoms and finally the physical signs disappear (Diagram 2), the symptoms disappear but physical signs persist (Diagram 3),

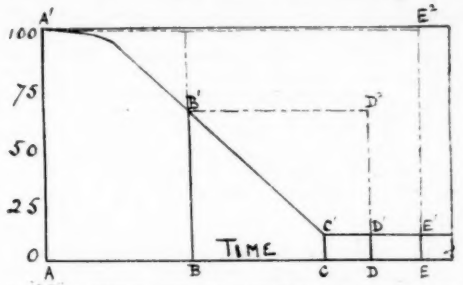

DIAGRAM 3.—Hysterical paralysis associated with organic paralysis, which recovers but leaves organic physical signs.

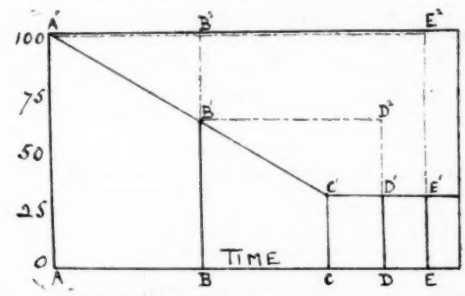

DIAGRAM 4.—Hysterical paralysis associated with organic paralysis which recovers incompletely.

or some symptoms as well as the physical signs persist (Diagram 4).

If, however, no re-education is given the symptoms may again be perpetuated by the development of an hysterical element. In that case at the period represented by D, when no further improvement can take place, the incapacity D D² in Diagram 2 and D' D² in Diagrams 3 and 4 is hysterical and can be rapidly removed by psychotherapy. If the partly hysterical nature of the condition is not recognised at all until later, when no further improvement in the organic residue is possible, as, for example, at the moment marked E, psychotherapy will result in complete recovery (Diagram 2), almost complete recovery although the physical signs will still be present (E E', Diagram 3), or incomplete recovery (E E', Diagram 4).

Diagnosis.

The numerous symptoms and physical signs which are supposed to help in the diagnosis between organic and hysterical paralysis fall into three groups. The first group consists of the phenomena which afford visible and conclusive evidence of structural changes in the nervous system, such as optic atrophy and neuritis, and abnormal cells in the cerebro-spinal fluid. Equally conclusive are the second group of physical signs—those which are entirely beyond voluntary control, such as the Argyll Robertson pupil, the reaction of degeneration, and loss of knee- and ankle-jerks. The third group of signs are those which could be imitated more or less accurately by anyone who had studied them, but which would not be likely to occur as a result of auto-suggestion or be simulated by an ordinary malingerer, as the individual would be unaware that such signs accompanied the disease he believed or pretended that he had.

The signs belonging to the last group lose much of their value in distinguishing organic from hysterical paralysis, when the latter has followed organic paralysis, as the characteristics of the hysterical paralysis have been suggested by those of the organic paralysis. An ordinary individual who develops hysterical hemiplegia shows no paralysis of his platysma muscle (Babinski's platysma sign), because he is likely to be unfamiliar with the action of the platysma, and being unaware of its existence would

continue to use it when the rest of the same side of the face was paralysed, but if the hysterical paralysis was a sequel of an organic paralysis the characteristics of the latter, including paralysis of the platysma, would be perpetuated.

Thus in hysterical hemiplegia and paraplegia following organic hemiplegia and paraplegia respectively most of the third group of physical signs, which are regarded as characteristic of organic disease, may persist. Being caused by suggestion, they are just as much a part of the hysterical condition as the paralysis itself, and like the latter they are completely removable by psychotherapy. Thus we have seen cases of organic paralysis followed by hysterical paralysis in which the platysma, pronation, and fan signs of Babinski, combined flexion of the thigh and pelvis ("Babinski's second sign"), ankle clonus quite indistinguishable from that present in organic disease, Raimiste's and various other signs, were present; but the condition was none the less hysterical, as the paralysis together with these physical signs disappeared rapidly and completely under psychotherapy.

The diagnosis of such cases may thus be extremely difficult, as hysterical paralysis following organic paralysis may not only be associated with permanent physical signs of organic disease, such as the extensor plantar reflex, caused by the residual organic disease, but also with the accessory signs, which are supposed to indicate the presence of organic disease, but which may themselves be really hysterical, being produced by suggestion and removable by psychotherapy.

Treatment.

There is a widespread tendency to adopt a waiting attitude in the treatment of *acute* organic nervous diseases which is sound if confined to the early stages, but becomes dangerous if it is continued for a longer period. The natural tendency of most acute diseases is towards recovery, but the functional capacity does not always tend to return *pari passu* with structural recovery, unless the physician makes use of psychotherapy in combination with re-education from the earliest possible moment. In organic hemiplegia following a head wound or an acute vascular lesion there is no reason why passive movements should not be commenced on the day of onset, and as soon as the patient's general condition permits he should be encouraged to attempt voluntary movements. When the hemiplegia is associated with aphasia re-education of speech should be begun at the same time. Treatment of this kind, in which psychotherapy is preventive rather than curative, is extremely important and leads to a maximum of recovery in a minimum of time. The same is true in such conditions as acute poliomyelitis, in which there is often too great a tendency to rely upon mechanical means, such as massage and electricity, and to forget the psychical side.

Illustrative Cases.

The following cases are some of the more striking examples we have seen in soldiers of severe symptoms resulting from organic injury or disease being perpetuated as a result of the grafting of an hysterical element on the original organic incapacity. The first case is perhaps the most remarkable of all, as for two years he had been regarded by everybody who had seen him as suffering from incurable organic hemiplegia, but recovery with psychotherapy was almost complete.

1. *Combined hysterical and organic hemiplegia of two years' duration following nephritis; almost complete recovery with psychotherapy.*—Pte. R., aged 29, reported sick on Sept. 29th, 1916 when he noticed some œdema of his legs. Nephritis was diagnosed and he was sent to a hospital. On Oct. 1st he had several fits and was unconscious for a few hours. When he recovered consciousness he was suffering from severe right hemiplegia, involving the face, arm, and leg, and he was also aphasic. He was transferred to England, and in July, 1917, as his urine was now free from albumin, he was transferred to a neurological hospital in London. The physician under whose care he remained for more than a year reports that on admission "there was complete right hemiplegia with late rigidity and asphasia and also facial paralysis on the same side. Wassermann reaction negative. Complete anæsthesia on the right side, tactile and thermal. No sphincter trouble. All deep tendon reflexes much exaggerated, right greater than left, well-marked ankle clonus right side; plantar reflex indefinite; tongue deviation to paralysed side. Later he developed spastic contracture of the right limbs." After a time he regained his power of speech with re-education. In May, 1918, a tenotomy was performed to overcome the flexion of his right knee. As this was not successful, his leg was subsequently twice moved forcibly under anæsthesia. The physician and several colleagues who saw him in consultation agreed that the hemiplegia was entirely organic.

In August, 1917, he was transferred to another neurological hospital in London, as an attempt to gain him admission to the Star and Garter Hospital had failed. There was still no improvement when he came under our care at Seale Hayne Hospital in October, 1918. The right leg and arm were totally paralysed and absolutely rigid, the elbow, wrist, and fingers being flexed and the knee semi-flexed. The face, including the platysma, was paralysed, but, as in ordinary organic hemiplegia, the upper part was not involved. The deep reflexes of the arm and leg were much exaggerated on the right side and slightly exaggerated on the left and well sustained; regular ankle clonus was present. The abdominal reflex was absent on both sides. The plantar reflex could not be obtained owing to the extreme degree of spasticity.

The spastic paralysis was treated by persuasion and re-education and in two and a half hours the patient was able to extend his leg and arm and move them slowly in all directions. At the end of another hour he was able to stand by himself and next day he was able to walk. This result was obtained without causing any pain to the patient in spite of the extreme rigidity. The exaggerated deep reflexes and ankle clonus remained unaltered, and an extensor plantar reflex was now obtained on the right side.

An attempt was next made to overcome the facial paralysis, and in 10 minutes there was marked improvement. After 45 minutes' treatment the facial paralysis had disappeared and the platysma was contracting normally.

The patient is now (January, 1919) able to use his right hand for all ordinary purposes—e.g., writing and needlework—and he walks with only a slight limp.

2. *Hysterical hemiplegia with persisting signs of organic disease following concussion by shell explosion cured by psychotherapy after persisting for eight months.*—Pte. T., aged 22, was admitted to Seale Hayne Hospital on June 20th, 1918, for hemiplegia of the left side, which developed as a result of being blown up by a shell eight months before. He could only stand with assistance and was quite unable to walk. There were definite signs of an organic nervous lesion; the left plantar reflex was extensor, the abdominal reflex was absent, the ankle-, knee-, wrist-, and elbow jerks were much exaggerated on the left side, and well-sustained ankle clonus was present.

In spite of this it was decided that the condition was probably to a large extent hysterical, and the patient was treated by vigorous persuasion and re-education. Within an hour he was made to walk and run, but it took five or six days to develop a normal walk and a natural carriage of the left arm, which was at first held in front of his left thigh. A fortnight later a distinguished neurologist who was visiting the hospital watched him playing billiards, and was asked to guess which had been the hemiplegic side, but the functional recovery was so complete that he was unable to do so, although all the physical signs of organic nervous injury were still present and had not altered when the patient was discharged from the hospital, feeling perfectly well, two months later.

3. *Combined hysterical and organic hemiplegia of 11 months' duration, following gunshot wound of the skull; great improvement with psychotherapy.*—L./Cpl. B., aged 23, was wounded in the right parietal region in December, 1917, and was admitted to a general hospital in France with left-sided hemiplegia. Anæsthesia was noted over the left leg up to the knee and over the left hand and arm to a point just above the wrist. The report states that he could wriggle his toe and finger. On Dec. 28th an operation was performed and a small crack in the skull was found; some bone was removed, but no injury to the dura mater was discovered, and pulsation was normal. The bone was replaced and the wound sutured.

On April 3rd, 1918, when in hospital in England the following report was made after a detailed investigation of his cutaneous sensibility. "Loss of sensation over the whole of left leg up to the groin, and over the left side of trunk behind a line drawn from the anterior superior spine of the ilium to the middle of the armpit. Loss of sensation over the upper limb up to the armpit and on the outer surface as far as the acromion process. Sensation of heat corresponds with tactile sensation. No sense of joint movement in upper or lower limbs."

On July 17th, 1918, he was transferred to Seale Hayne Hospital. The arm was rigidly extended at the elbow, the fingers were extended at the metacarpo-phalangeal joints, but flexed at the interphalangeal joints. The leg was rigidly extended at the hip and knee and the foot was fixed in a position of extreme dorsi-flexion. The deep reflexes were increased on the left side and well-sustained and regular ankle clonus was present. The big toe did not take part in the plantar reflex, but the fan sign was present on the left side. The degree of rigidity was extreme and the strongest effort was required to bend any joint.

The patient was treated by persuasion and re-education; movement in all joints, except the shoulder, was obtained in one sitting of four hours without much discomfort to the patient. His temperature rose the next day, and he developed pleurisy with effusion, which necessitated the postponement of further treatment for over two months. Psychotherapy was then continued and he quickly learnt to walk well. He still has some spasticity, but is slowly improving.

At the present time (March 2nd, 1919) there are no signs of organic disease, the ankle clonus and increased deep reflexes having disappeared.

Whilst in France limited anæsthesia was found with slight movement of the extremities; eight months of treatment with electricity and massage only had the effect of making the paralysis absolute and increasing the area of hysterical anæsthesia; the aggravation of symptoms was clearly due to suggestion unconsciously applied by his medical officers. If the patient had been encouraged to move from the first progress would have been steady and recovery would quickly have taken place.

4. *Syphilitic meningo-myelitis complicated by hysterical paraplegia.*—L./Cpl. M., aged 20, reported sick on April 8th, 1916, with pain in the legs. A fortnight later he noticed weakness and became unable to walk. There was some loss of control over the bladder and rectum during May. On admission into hospital he was quite unable to walk, but the loss of power in the legs was incomplete. Sensation was normal. The knee- and ankle-jerks were exaggerated and ankle clonus was well marked. The abdominal reflexes were absent. Plantar reflex was examined on several occasions and was invariably flexor on both

sides, but no doubt was felt by the consulting physician who saw him in France that there was organic disease affecting the lateral columns.

On reaching England the Wassermann reaction of the blood was found to be positive, and there was some tenderness of the spine. Iodides were given but no improvement occurred, so that the original diagnosis of syphilitic meningo-myelitis was discarded for disseminated sclerosis.

He came under our care for the first time in December, 1916. There were now no physical signs of organic disease, and it was clear that the paraplegia was hysterical. With persuasion and re-education he rapidly recovered. He was then given intensive anti-syphilitic treatment until the Wassermann reaction was no longer positive.

The paraplegia was probably at first organic and due to syphilitic meningo-myelitis. The iodide doubtless led to recovery from the organic lesion, but the paraplegia was perpetuated as an hysterical condition, which only disappeared when treated by persuasion and re-education.

5 *Hysterical paraplegia following organic paralysis due to concussion by shell explosion, cured by psychotherapy two months after the onset.*—Pte. M., aged 25, enlisted in September, 1914, and served for six months in France and a year in Salonika. He was very fit the whole time, and was never wounded by the shell fire. On Nov. 22nd, 1916 he was blown up by a shell, and remained unconscious for four days with signs and symptoms of complete organic left hemiplegia with paresis of the right leg, and incontinence of urine and fæces. He began to answer questions on Dec. 2nd, and complained of severe headache. His knee-jerks were then greatly exaggerated, especially the left, and the plantar reflex on both sides was extensor. The headache soon disappeared and the paralysis gradually improved, but he was still quite unable to walk when he reached Netley on Jan 24th, 1917

He had no recollection of anything between the fight in which he was blown up and the last few days in Malta. The right knee-jerk was 6, the left 7 (average normal 4); the left plantar reflex was still extensor, but the right was now flexor, and the left abdominal reflex was absent. The inability to walk was clearly hysterical, and it disappeared the day after admission as a result of persuasion; with further re-education he soon learnt to walk without even a limp.

When next examined, on Feb. 2nd, the left plantar reflex had become flexor, and the left abdominal reflex was as brisk as the right; but Babinski's second sign (combined flexion of thigh and pelvis) was still very definitely positive and the knee-jerks were as before. The Wassermann reaction was negative.

He was discharged to duty in April, the superficial and deep reflexes being normal and equal on the two sides, but Babinski's second sign was still present though less marked.

A striking point in this case was the disappearance of the extensor plantar reflex, which had persisted for 64 days, within 9 days of the hysterical paraplegia being cured.

6. *Hysterical paralysis associated with organic paralysis due to hæmatomyelia, the result of spinal concussion following shell explosion.*—Pte. A. C., aged 24, on Feb. 19th, 1917, was blown three feet into the air, falling heavily on his face. He did not lose consciousness, and he is quite certain that his head was not doubled under him. He was unable to move for several hours, except that he managed to raise his face out of the mud in order to breathe.

On being taken to hospital he remained quite helpless. His elbows were kept acutely flexed, as in a lesion of the fifth cervical spinal segment. His right arm and leg were completely paralysed, and only very feeble movements were possible on the left side. He had much aching and tingling pain in his limbs and a spasmodic pain in the calves. He had some retention of urine during the first day and a catheter was passed on one occasion, but after this his bladder and rectum showed no abnormality. Though listless and suffering from headache, his mind was not confused and his speech was normal. Knee-jerks were very weak and no definite plantar reflex was obtainable.

By April 20th a slight degree of power had returned in the right arm; both arms were still painful. On May 12th it was noted that, although there was no anæsthesia, sensation to light touch was diminished up to the region of the clavicle. The headache had disappeared and the pain in the limbs was well marked. Slight improvement in power occurred as a result of massage, but the muscles remained flabby and began to waste. By May 22nd the muscular tone had improved. The knee-jerks were now increased, ankle clonus was elicited on the right side, and the plantar reflex was extensor on the right side but normal on the left; both abdominal reflexes were absent.

On admission to Netley on May 30th he could move both arms and both legs, but they were very weak, the right side being worse than the left. Slight pain was still present in the hands and arms, but the pain in the legs had disappeared. There was marked wasting of the muscles of the upper limbs, especially of the hands, the atrophy and weakness of the right hand being severe. The right knee-jerk was 5 and the left 4½ (normal 4); true ankle clonus was present on the right side and also, though less well maintained, on the left. No abdominal reflexes were obtained and the plantar reflex was definitely extensor on both sides. The skin was much thickened over the palms of the hands and soles of the feet.

It seems clear that a hæmorrhage occurred into the cervical spinal cord at the time of the explosion, probably as a result of aerial concussion rather than of the concussion caused by falling after being blown into the air, as the patient is quite certain that the fall did not hurt him particularly and that he could not put out his arms to save himself when he was in the air.

On June 11th the patient was still unable to sit up in bed and there was no improvement in the condition of his arms and legs. It seemed possible that some of the incapacity was hysterical in spite of the definitely organic basis. He was therefore treated by very vigorous persuasion, and, although he would make no effort at first, at the end of five minutes he was sitting up in a chair, and at the end of a quarter of an hour he was able to stand and take a few steps with comparatively little support. During the next ten days he learnt to stand and walk with an almost normal gait and without assistance.

Since then steady improvement has occurred both in the hands and legs; his gait is almost normal, and he can use his hands for all ordinary purposes, though there is still some atrophy and weakness of the small muscles. When discharged on Oct. 23rd the wrist-jerks were normal; the right knee-jerk was 7, the left 6, and slight ankle-clonus was obtained on the right side. The right plantar reflex was extensor, the left flexor. The abdominal reflexes had not returned.

The condition must have been largely hysterical, and due to auto-suggestion causing the perpetuation and exaggeration of symptoms which were originally entirely organic and were still to some extent a result of organic changes in the spinal cord.

7. *Hysterical paraplegia following organic paraplegia, due to a wound of the spine received 17 months previously.*—L./Cpl. E., aged 43, was wounded in the back by shrapnel on Sept. 27th, 1916. He immediately became paraplegic. A laminectomy of the sixth and seventh dorsal vertebræ was performed on Oct. 10th, and a piece of shrapnel was removed, but no details about the operation are obtainable. He had incontinence of urine and constipation for several weeks. By the end of February, 1917, he could get about on crutches with difficulty. He was transferred from hospital to hospital before he was finally transferred to our care at Netley on March 28th, 1918.

On admission he could only stand with the aid of crutches. The right knee-jerk was markedly exaggerated (9), with reponse to the lower end of the tibia and slight spread to the opposite side; ankle clonus was marked and sustained, but the plantar reflex was flexor. The left knee-jerk was 8 (average normal 4), ankle clonus was present, but not so well sustained, and the plantar reflex was flexor. With persuasion and intensive re-education he was walking in less than an hour. In a month his gait was normal, but rather heavy. The signs of organic disease remained unaltered. He was then discharged from the service, but was quite fit to follow his civil occupation.

8. *Spinal concussion involving posterior columns associated with hysterical paraplegia.*—Pte. W., aged 32, was buried by a collapsing trench on July 31th, 1917; he was fit in every way before this happened. When admitted to hospital in France he was unable to speak or move his legs, and it was found that he had no knee-jerks. His speech returned in a few days after stimulation with faradism, but he continued to stammer.

On admission to Netley on August 28th he was still completely paraplegic and had a severe stammer; both knee- and ankle-jerks were completely absent, and there was considerable rigidity of the legs. The plantar reflexes were normal. As a result of vigorous suggestion with the aid of faradism he was induced to walk on the day of admission, and with re-education his speech and gait slowly improved.

At the beginning of January, 1918, the knee- and ankle-jerks were still absent and a slight Romberg sign was present but he walked almost normally. The Wassermann reaction of the blood and cerebro-spinal fluid was negative, and no abnormal cells were found in the latter.

It seems probable that the loss of jerks and the incoördination were due to the spinal concussion having involved especially the posterior columns, as in a fatal case described by Lieutenant-Colonel F. W. Mott. The response to treatment by suggestion and persuasion shows that in spite of this the paraplegia was largely hysterical in origin, the paralysis due to the concussion being perpetuated by suggestion. The speech defect was, of course, entirely hysterical.

It is generally taught that *incontinence of urine* is never hysterical. But although the idea of incontinence is very unlikely to suggest itself to an individual spontaneously, it is not uncommon for the incontinence which is normal in babies to be perpetuated into childhood or even adult life as an hysterical condition. Several cases of this sort in soldiers have been described in the "Seale Hayne Neurological Studies," by Captain J. W. Moore, M.C., U.S.A.,[4] to whom we are also indebted for the description of the following case of hysterical incontinence, occurring as a sequel of the incontinence caused by the temporary organic changes resulting from concussion of the spinal cord.

9 *Hysterical incontinence of urine and hysterical paraplegia following concussion of the spinal cord, with organic physical signs.*—Pte. M. P. was buried in a trench in France in July, 1916. He was dug out and admitted to hospital suffering from weakness of his legs and incontinence of urine. This condition continued until he was admitted to Seale Hayne Hospital on August 2nd, 1918. On admission he could only walk with a shuffling and tremulous gait. He had generalised tremors, especially of the head and neck, and was wearing a urinal day and night on account of incontinence. The abdominal reflexes were absent on both sides, the knee-jerks were slightly increased (5 to 6), and slight ankle clonus and a definite extensor plantar reflex were present on both sides.

The incontinence was treated by persuasion and re-education. In a short time it was controlled during the day, but at first persisted at night. He was then treated by hypnosis, and after three weeks was completely cured. With the relief of the incontinence the paraplegia also disappeared, and he can now walk quite well, although the physical signs are unaltered.

In the following case *blindness* of a character generally supposed to be typical of organic disease was perpetuated as a hysterical symptom after the initial organic changes in the brain had disappeared.

10. *Partial hysterical blindness following organic blindness caused by a wound in the occipital region and associated with hysterical deafness.*—Pte. W., aged 22 was wounded over the right occipital region on June 7th, 1917. He was unconscious for five days and was then trephined. On admission to Netley on July 6th, 1917, he was completely deaf in both ears, but as the vestibular reactions on rotation were normal the deafness was regarded as hysterical. It was noticed that he had difficulty in seeing and that he held anything he

wished to read low down on the right side, although he volunteered no complaint about this, and only spoke about his deafness. On further examination it was found that he was totally blind except in the right lower quadrant of the field of vision of both eyes, the blindness being what might be expected to result from the wound over the lower part of the right occipital lobe, near the middle line, which would be likely to involve the left lobe also to a less extent.

An attempt was made at the end of August to cure the hysterical deafness by a pseudo-operation, the patient being told that a cut behind his ear would certainly restore his hearing. Nothing was said to him about his blindness, which was regarded as organic. The "operation" resulted in immediate improvement in his hearing, as it was now possible to carry on a conversation with him by shouting. Quite unexpectedly it was found that his vision was now absolutely normal, the blindness having been cured by the suggestive effect of the "operation."

It must, therefore, have been due to perpetuation by auto-suggestion of the organic blindness, which was caused by concussion rather than destruction of the occipital lobe.

11. *Mental symptoms and hysterical paraplegia, aphasia, and incontinence of five months' duration following a wound of the brain cured by re-education, persuasion, and suggestion.*—Pte. P., aged 27, was wounded in the left temporal region on Dec. 6th, 1917. The dura mater was found to be torn and brain matter was escaping. A foreign body lying half an inch deep was removed and the wound was closed. On Dec. 20th the patient had slight paresis on the left side of face and on Feb. 4th, 1918, he is reported to have had a fit. He was admitted to Netley on March 20th, 1918, after being in bed for 73 days in another hospital in England.

He was drowsy and listless and was unable to articulate. He was completely paraplegic and passed urine and fæces in the bed. There were, however, no signs of organic disease. He was at once made to get up in a chair and encouraged to take an interest in his surroundings. In a few days he became clean in his habits and his speech returned.

A month after admission his mental condition was sufficiently clear to make it possible to treat the paraplegia by persuasion. He improved slowly and by May 24th was able to walk with a pseudo-spastic gait. The next day he was treated by direct suggestion by means of faradism, and in 15 minutes was walking well and climbed two flights of stairs to see a friend. He has now returned to his old trade as a carpenter, and he is sound mentally as well as physically.

References.—1. A. F. Hurst and J. L. M. Symns: Review of Neurology and Psychiatry, 1918, xvi., 1. Seale Hayne Neurological Studies, 1918, i., 1. 2. J. L. M. Symns: Quarterly Journal of Medicine, 1917, xi., 33. 3. A. F. Hurst and S. H. Wilkinson: Seale Hayne Neurological Studies, 1918, i., 24. 4. J. W. Moore: Seale Hayne Neurological Studies, 1919, i., 141.

NOTE ON

DETOXICATED VACCINES.

BY DAVID THOMSON, M.B., CH.B EDIN., D.P.H. CAMB.,
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DURING the past year the author has conducted extensive researches on the removal of the endotoxins from the gonococcus and other organisms in order to produce non-toxic vaccines which could be injected in sufficiently large doses to develop a great amount of immunity.

Development of Immunity.

Recent researches all point in the direction that it is very difficult or almost impossible to develop antibodies to the endotoxins of germs. The only successful antitoxins so far produced are those against the exotoxins, such as are developed by the diphtheria and tetanus bacilli. The toxins of the majority of pathogenic organisms, however—e.g., the gonococcus, meningococcus, typhoid bacilli, &c.—are endotoxins, towards which little or no immunity is developed, *vide* Wells (1918).[1]

All observers are agreed, on the other hand, that agglutinins, precipitins, complement-deviating substances, and bacteriolysins, can be developed in a considerable degree against the actual germ substance itself. If we take the gonococcus for an example, it is found that subcutaneous inoculations of the germ into man or animals induces the formation of agglutinins, precipitins, complement-deviating substances, and bacteriolysins in the blood. Thus immunity is developed towards the gonococcus itself, whilst, on the other hand, no successful antitoxin has so far been developed by inoculations towards the gonococcal endotoxins. It seems most reasonable to assume, therefore, that no advantage is to be gained by injecting the toxin and that it should be removed if possible so that larger doses of the actual germ substance may be administered.

Torrey (1908)[2] found that inoculations of gonococci into guinea-pigs produced no detectable immunity if the dose administered was less than 1/16th of the fatal dose. Whereas, when inoculations amounting to 1/8th to 1/12th of the fatal dose were given, marked immunity was produced. It would appear, therefore, that to get a large amount of immunity large doses must be injected. Unfortunately, most pathogenic organisms are so toxic that such large doses are impossible.

Reasoning in this manner, it seemed to me that the removal of the endotoxin from germs was urgently required for vaccine purposes, since its presence presented disadvantages and no advantages. The problem consisted in the removal of the endotoxin without at the same time altering the nature of the remaining non-toxic germ substance, so that the latter would still be potent in stimulating the production of agglutinins, precipitins, &c.

Detoxicated Gonococcal Vaccine: Serological Tests.

The procedure which was adopted to attain this end will be described in a detailed paper almost immediately. At any rate, the toxicity of most germs was successfully reduced some 50 to 100 times. Thus, with ordinary gonococcal vaccine it was found necessary to begin in acute cases with doses not exceeding 5 millions and gradually to increase to about a maximum of 250 millions. On the other hand, the same strains of gonococci when detoxicated could be administrated in acute cases in doses of 2500 millions and increased to 10,000 millions. These large doses caused even less toxic symptoms than the small doses of the ordinary vaccine.

To test the therapeutic value of the new detoxicated vaccine a large number of complement-fixation tests were carried out on gonorrhœal cases in three parallel series, treated at the same time by the same clinician.

Series A received no vaccine treatment.
Series B were treated with ordinary gonococcal vaccine.
Series C were treated with large doses of detoxicated gonococcal vaccine.

The amount of complement deviated in the presence of antigen and serum was estimated weekly in each case, as it seemed reasonable to suppose that the amount of immunity produced could be estimated by this method. Thus one minimum hæmolytic dose of complement fixed was taken to represent 1 unit of immunity, two M.H. doses fixed represented 2 units of immunity, and so on.

Series A showed on the average some 3 units of immunity acquired naturally in the course of the disease.
Series B showed an average of about 4 to 5 units of immunity indicating the value of ordinary vaccine.
Series C showed an average of about 8 to 12 units of immunity showing a marked superiority of the new vaccine.

The therapeutic results obtained corresponded very markedly with the serological tests. Thus it was found that the cases which showed the highest degrees of immunity as estimated by the complement-fixation test recovered much more rapidly, and *vice versa* in those which showed a low degree of complement-fixation the disease ran a prolonged course.

Results obtained with Inoculation in Normal Individuals.

Ordinary gonococcal vaccine was injected into several normal persons who had never suffered from gonorrhœa, and who gave a completely negative complement-fixation reaction. In these cases it was found by repeated tests that no complement-deviating substances were developed in the serum after an injection of 100 millions of ordinary gonococcal vaccine, followed by 200 millions six days laters.

On the other hand, a dose of 5000 millions of detoxicated gonococcal vaccine induced the formation of sufficient anti-substances in the blood to give a double positive reaction, and a dose of 10,000 millions developed a triple positive reaction in another normal person, whose blood was previously negative.

Moreover, the dose of 200 millions of ordinary gonococcal vaccine produced malaise and fever in the normal subject, whereas the symptoms arising from a dose of 5000 millions of the detoxicated vaccine were scarcely noticeable and no fever was induced.

Further experiments have been carried out with detoxicated vaccines for the prevention and treatment of bronchial and nasal catarrh and the results so far have been very promising. The clinical evidence is increasingly convincing that this detoxication process will revolutionise the whole subject of vaccine treatment and preventive inoculation. I wish to thank my commanding officer Bt.-Col. Harrison, D.S.O., K.H.P., for the kind interest he has taken in this work.

[1] Wells (1918): Chemical Pathology. W. B. Saunders Co.
[2] Torrey (1908): A Study of Natural and Acquired Immunity of Guinea-pigs to the Gonococcus. Jour. Med. Res., xviii., 347.

SPIROCHÆTES IN THE BLOOD IN TRENCH FEVER.

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DURING the last two or three years I have examined a very large number of blood films taken from cases of trench fever in France and in our local military hospitals. For the former I desire to thank Captain Adrian Stokes, R.A.M.C., and especially Captain A. T. Nankivell, R.A.M.C., for kindly sending me films from France.

The Difficulties Met With.

In common with so many other observers, my attention was primarily directed to the search for spirochætes, as the disease has many characteristics of a spirochætosis. Nothing but failure resulted from very prolonged efforts. Whatever be the cause of trench fever, it exists either in very small numbers or in the form of some minute, characterless, or invisible organism, otherwise it would have been detected before this.

It is quite conceivable that the causal organism is present in exceedingly small numbers in the blood. In syphilis, in rat-bite fever, and in infectious jaundice spirochætes are definitely known to be the cause, and in each case occur in the peripheral blood at one or other stage of the disease; yet how many observers have succeeded in finding them in human blood? My own experience in the case of infectious jaundice illustrates this. Captain Adrian Stokes kindly sent me eight blood films taken from a definite case of infectious jaundice on the fourth day of the disease. A fortnight's examination entirely failed to find a single spirochæte. Subsequently he sent me six films from a case on the second day of the disease, and after numerous very prolonged examinations extending over several days I found two spirochætes.

Further, it is probable that if spirochætes do occur in the blood of trench fever they will be more likely to be found during the first attack, and it is not always easy to say from the first attack of fever what the condition may turn out to be. Of the numerous films that I examined from cases in our local hospitals none were earlier than the third or fourth relapse.

Present Investigation.

In order to obtain blood films from the earliest stage of trench fever I applied to General Sir David Bruce, chairman of the Commission on Trench Fever, and he asked Major W. Byam, R.A.M.C., to send me films from successfully inoculated or scarified men at the Hampstead Military Hospital, both just before and during an attack of the disease. I take this opportunity of expressing my thanks to both of these workers for their kindness.

In two out of six of these cases I have found a few spirochætes or spirochætal-like bodies in one or two of the many blood films examined. Major Byam's notes on these cases were as follows:—

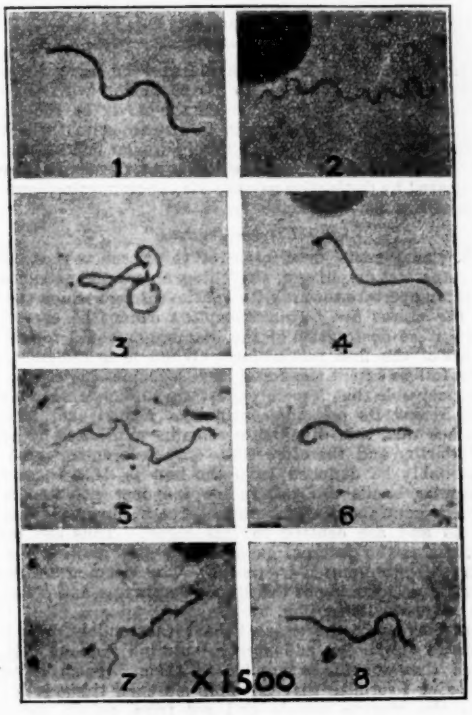
CASE 1.—Peripheral blood smears, 3.15 P.M., April 14th, 1918. On April 14th, at 11 A.M., developed trench fever as result of inoculation with infected lice excreta. Incubation eight days. Onset with frontal headache and pains in left hip, left side and down left arm. (Left arm was seat of scarification.) 3.15 P.M.: Slight shivering and increased headache. T. 102° F.; P. 84. Pains in muscles of thigh and in both hips and loins. April 15th, 10 P.M.: Second day of disease. Blood films.

CASE 2.—Blood films, 11.20 A.M., Nov. 13th, 1918. First attack of fever.

The spirochætes or spirochæte-like structures vary considerably in their form, but they have in common the fact that they are all stained with Giemsa a delicate blue tint; they are all faintly granular, and in no case are the ends pointed. Figs. 1, 3, 4, and 6 could be found with the 1/12 oil immersion objective. Figs. 2, 5, 7, and 8 are very faint indeed, and the photomicrographs show them even better than they are seen under the microscope.

I have marked the position of each by a small ring on the film by a diamond-marker; the size of the ring is such that the whole is included in the field with a magnification of 240 diameters. Yet when such a ring is examined with a 1/12 objective it is most difficult to find the organism, especially that shown in Figs. 5, 7, and 8. It would therefore be almost impossible to find such a structure by direct examination with an oil immersion lens. I found them by means of dark-ground illumination, logged and marked their position before mounting. This fact may vitiate against Figs. 5, 7, and 8 being regarded as spirochætes.

The photomicrographs give a better impression of the appearance of the structures than any description.



Spirochætes in blood films of trench fever. The original micro-photographs have been slightly enlarged in reproduction, and the magnification is now × 2000.

FIG. 1 (*Case 1*).—Blood film A, taken at 10 P.M., April 15th, on secon day of fever; open wavy spiral, ends round, length 12·6μ with two turns, diameter 0·4μ, slightly denser stained areas are seen in its course.

FIG. 2 (*Case 1*).—Blood film B, taken at 3.15 P.M., April 14th, on first day of fever; length 13·3μ with five spirals, small and slightly irregular.

FIG. 3 (*Case 1*).—Blood film C, taken at 10 P.M. April, 15th, on second day of fever; an irregular knotted form.

FIG. 4 (*Case 1*).—Blood film D, taken at 3.15 P.M., April 14th, on first day of fever; a wavy filament with one or two turns, with very fine granules, length about 11μ.

FIG. 6 (*Case 1*).—Blood film D, taken at 3.15 P.M., April 14th, on first day of fever; similar wavy filament.

FIGS. 5, 7, and 8 (*Case 2*).—Blood film I, taken at 11.20 A.M., Nov. 13th, during first day of fever; faintly stained filaments, with numerous irregular spirals.

Consideration of the Findings.

The questions which naturally arise are these actual spirochætes, and, if so, what relation have they to trench fever?

In answer to the former question, they have the general appearance of spirochætes, although those from the second patient are very elusive, of slight refractive power, and very difficult to see. The staining reactions with Giemsa, a pale blue colour, is not, however, common in spirochætes in general. They cannot be regarded as artefacts, and the faint irregular structures in Figs. 5, 7, and 8 cannot be compared to "streamers," which, in my experience, are never met with in ordinary air-dried stained films.

Whether they have any actual causal relation to trench fever is much more difficult to say. The fact that they were detected only in the blood of definite cases of artificially induced trench fever, and then only during the first attack of fever, is at least suggestive. The generally accepted statement "that at least in one stage of development the virus of trench fever is filterable" does not exclude that virus being a spirochæte. Some spirochætes are known to be filterable, and Noguchi states that the *Spirochæta icterohæmorrhagiæ* will pass the Berkefeld candle V.

THE LOWER UTERINE SEGMENT AND UTERINE TENDONS.[1]

BY E. HASTINGS TWEEDY, F.R.C.P. IREL.,

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GYNÆCOLOGISTS are, or should now be, agreed that the uterus owes its stability to its connexion with the fibro-muscular bands which surround the cervix at the level of the os internum and radiate in all directions to their attachments in the pelvis. These fibro-muscular bundles show an unequal distribution, and where best developed they are indicated by distinctive names—viz., sacro-uterine ligaments, lateral ligaments of Mackenrodt, &c.

"Uterine Tendons."

The anatomists' description of this tissue is that it forms an imperfect diaphragm, stretching across the pelvic cavity, with an aperture towards its centre through which the neck of the uterus fits. This conception cannot be correct, for were it so destruction of the diaphragm would follow as a result of the first parturition. When it is remembered to how full an extent the fœtal head occupies the cavity, it is inconceivable that a membrane torn to such a degree could ever renew its original continuity. Experience, however, teaches that this diaphragm remains uninjured by normal childbirth, and therefore the only inference which can reasonably be deduced from the fact is, that these fibro-muscular bands are not interwoven one with another to form a continuous membrane but pass separately into the uterus and are centred in this organ. Thus the muscle bundles at the internal os must exercise a direct control over this fibro-muscular tissue. The opening of the os permits a slackening of the fibrous diaphragm and closure of the os renews its tension.

In this respect the tissue behaves as tendons do in other parts of the body, and surely "uterine tendons" is the name that should be applied to them. From inductive reasoning I surmise that this fibro-muscular tissue is derived from the uterine muscle and not from pelvic fascia or parametrium.

The recognition of the above mechanism has made clear many obscure phenomena in obstetrics and gynæcology. It is evident that the uterus after childbirth owes its great mobility to relaxation of the uterine tendons, and the same condition permits the vaginal fornices to be pushed by vaginal plugging so far up into the abdomen as to stop the circulation in the uterine arteries. During the performance of Cæsarean section I have been able to demonstrate the latter fact to a number of experts, so that the question is no longer in doubt.

In a nulliparous woman the cervix is also closed by a certain amount of fibrous and elastic tissue which is probably derived from the pelvic fascia. This tissue is torn during childbirth, and the tearing accounts for the different behaviour of the multipara's and primipara's cervix during the process of dilatation.

The Lower Uterine Segment.

The lower uterine segment is formed by a growth and is not a mere stretching of pre-existing tissue. It is impossible to account for its presence by any other explanation, and it can be clearly shown that the cervix is the structure of all others which most readily responds by growth to a continuous pressure.

It is wrong to regard the cervix as consisting of tissue prone to stretch. It possesses this property within very narrow limits, and efforts at forcible dilatation, whether during childbirth or in the unimpregnated, are prone to be followed by extensive ruptures. On the other hand, it is capable of phenomenal growth when exposed to a continuous pressure strain. In procidentia uteri its supravaginal portion becomes enormously hypertrophied. In spite of its greater length its diameter does not diminish, which clearly shows that the process is one of hypertrophy.

The following experience well illustrates this point. During the performance of ovariotomy on an old woman with prolapse of the uterus I amputated the uterus above the os externum and stitched the small stump to the abdominal fascia in an effort to keep up the prolapse. In a year the condition was worse than ever. The stump had held to the abdomen, but the small cervix had hypertrophied and again permitted the vagina to turn inside out. In this instance the cervix must have increased to twenty-fold its original size, and there is no other structure capable of this wonderful metamorphosis.

The cervix does not under normal conditions elongate because of the protection it receives from the taut uterine tendons. These keep the uterus in equilibrium and take up all abdominal strain. The cervix lying beneath them is thus freed from pressure.

When pregnancy occurs the internal os opens and the ovum finds room for its increasing growth in the upper region of the cervix immediately beneath the uterine tendons. In response to this stimulus the upper part of the cervix hypertrophies to form the lower uterine segment. The fact that this segment is a growth comparable to that which occurred in my case of uterine prolapse accounts for its formation without any appreciable shortening of the cervix, and satisfies the objections of those who doubt its cervical origin because of the almost undiminished change in the length of the cervix during pregnancy.

The last question to be considered is that of the true boundary line which separates the cervix from the body of the uterus. Attempts to define this boundary have been made by microscopic and macroscopic efforts, but I am not aware that anyone has before suggested that the taut uterine tendons constitute the one and only division between them. The cervix must then be defined as that portion of the uterus which normally escapes pressure by lying beneath a portion of the uterine tendons.

Dublin.

[1] A paper read at the Royal Academy of Medicine in Ireland (Section Obstetrics), Feb. 14th, 1919.

ATTENUATION OF HUMAN, BOVINE, AND AVIAN TUBERCLE BACILLI.[1]

BY NATHAN RAW, C.M.G., M.P., M.D.,

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THE object of this short paper is to demonstrate the effect of long-continued and regular subculturing of pure cultures of human, bovine, and avian tubercle bacilli on artificial media containing glycerine. This process has been continued without interruption for 12 years and the cultivations are luxuriant and grow as readily as in the first year of subculturing. They retain all their characteristic and selective appearances, and can be easily identified as distinct types of tubercle bacilli.

Inoculation of rabbits and guinea-pigs by human and bovine bacilli have been made at intervals during the last 12 years (the full details of which will be published later), with the result that there has been a gradual decrease in virulence until at the present time they are almost non-pathogenic to animals.

History of Cultures.

The original culture of human bacilli was given to me by the late Professor Koch in 1906, and was prepared by him from the sputum of a case of primary pulmonary tuberculosis. The patient had suffered from phthisis for four years, and the culture was made in the last stages of the disease.

The original bovine culture was sent to me by Professor Calmette, of Lille, and was from the mesenteric glands of a cow which had been destroyed for advanced tuberculosis of the udder. The avian culture was sent to me by Professor Bang, of Copenhagen, and was from a chicken which died from epidemic tuberculosis in fowls.

Careful photographs were taken of the original cultures and at intervals up to the present time. All of these retain in a remarkable degree the exact and typical appearances of the original type, and can be easily and readily identified.

Avian bacilli being non-pathogenic to man need not be considered in this paper.

The important fact to bear in mind in the study of tuberculosis, and which has been amply demonstrated by a long-continued study of the subject is, that (1) the human body is

[1] A paper read before a Medical Society in France, at which cultivations of the organisms were shown.

attacked by two distinct types of bacilli—namely, human and bovine; (2) those two types of bacilli cannot grow in the body at the same time; (3) their method of infection is different and selective; (4) human and bovine bacilli are antagonistic to each other, and a mild infection of one type in the human body will produce an immunity to the other type.

Selective Infections.

The great bulk of tuberculosis is caused by *human bacilli* directly infecting the lungs and setting up primary pulmonary tuberculosis, pleurisy, tuberculous laryngitis, and secondarily tuberculous enteritis. As a general rule, these infections are limited to the respiratory organs and intestines, and in progressive cases death results from exhaustion and toxæmia.

Bovine bacilli are generally conveyed to the body in tuberculous milk and food and infect the various organs through the lymphatic channels. These infections are, as a rule, limited to children and early adult life.

The lesions usually produced are: (1) Primary abdominal tuberculosis (tabes mesenterica); (2) tuberculous glands; (3) tuberculosis of bones and joints; (4) meningitis and lupus; (5) tonsils and adenoids (occasionally); (6) miliary tuberculosis.

A person with primary pulmonary tuberculosis is not likely to develop a tuberculous bone or joint, and a primary bovine infection is not likely to develop a primary tuberculosis of the lungs. The lungs are, however, not infrequently infected in the course of a bovine infection of other organs.

Tubercle bacilli of bovine type would seem to be met with in from 10 to 30 per cent. of samples of milk submitted to bacteriological examination (Delépine). If the milk is not boiled or sterilised there is ample opportunity for the infection of susceptible children.

The organisms (human and bovine) are not transmutable, and cannot by any artificial growth be changed from one to the other type.

Treatment of Tuberculosis.

The real object of this work was to find out if it was possible to reduce the virulence of the bacilli to such a degree that it might be possible to use them therapeutically in the treatment of active tuberculosis. The longest period before recorded of the attenuation of these bacilli was three years, and that was not found to be enough.

Whilst a member of the International Committee on Tuberculosis I undertook in the year 1905 to subculture human and bovine bacilli for ten years. Unfortunately, owing to the war, the clinical work was interrupted during a four years' residence in France, but the subculturing was continued in my laboratory at home.

In 1914 several animals were inoculated with these bacilli of nine years' attenuation with practically negative results. In no case was any progressive tuberculous process set up in the animals, and post-mortem examinations showed no active tuberculosis.

Eight cases of apparently hopeless tuberculosis of the glands, bones, joints, and lupus, all with discharging sinuses, were treated with injections of living bacilli at intervals of one week. The injections were made subcutaneously in the triceps region, and beyond redness and slight swelling no bad effects were observed, and the patients noticed nothing unusual.

Later, four cases of acute and active pulmonary tuberculosis with large numbers of bacilli in the sputum were treated in the same way, and I have just seen and examined a hospital sister who was treated five years ago and is now on full duty and quite cured. So far as I know, all these patients are still living, and a full report will be published after an interval of five years from the date of treatment.

The whole of the cases were treated by mixed bacilli, the cultures being raised to a temperature of 220° F. for two minutes before injection.

All doctors are agreed that the treatment of tuberculosis is not satisfactory, and the results so far obtained are not what we might expect. After a personal experience in the treatment of over 4000 cases of tuberculosis in hospital and private there is no doubt whatever that so-called surgical cases (which, in my opinion, are chiefly of bovine origin), give the best results. Tuberculin in a great many cases gives excellent results, but the duration of the immunity produced is too short and the tuberculin treatment has to be continued for a long period.

Our whole object in attempting to cure tuberculosis is to prevent the growth of the bacilli in the body, and I feel sure this can only be done by some specific method as described in this paper.

The cases treated are too few and the time which has elapsed is too short to form any definite and final conclusions, but I feel encouraged to think that the careful use of such attenuated bacilli may have the effect of controlling and probably preventing tuberculous infections in the human body in much the same way as vaccination protects against small-pox, and antityphoid vaccine against typhoid fever.

Harley-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF GONORRHŒA

COMPLICATED BY ACUTE GONORRHŒAL ARTHRITIS AND KERATOSIS, RESEMBLING A MIXED INFECTION OF GONORRHŒA AND SYPHILIS.

BY NORMAN P. LAING, M.B., CH.B. LIVERP.,
LATE CAPTAIN, R.A.M.C. (T.F.)

THE case here recorded seems particularly interesting from the following facts: 1. That the keratosis was generalised and occurred on the trunk and limbs, and apparently in the mouth and round the coronal sulcus of the penis and anus. 2. That the clinical appearance of the lesions made a diagnosis of secondary syphilis combined with keratosis and gonorrhœal arthritis justifiable.

The patient was admitted with an uncomplicated anterior urethritis. Incubation period six days. He reached hospital three days after the discharge appeared. Gonococci found; prostate normal in size and consistency. He was given anterior irrigations (at 8.30 A.M. and 5 P.M.) of 1/8000 pot. permang. increasing to 1/4000 after four days. Demulcent drinks, *ad lib.*; patient rested for first week. Progress was uneventful; two-glass urine test showed a clear second glass till tenth day. The discharge was then muco-purulent. On the eleventh day he complained of slight dysuria and frequency during night. The prostate was slightly swollen and tense; second glass of urine was turbid and contained some blood. Temperature 100·6° F. He was put to bed at once, a morphia and atropine suppository was given; hot rectal injections twice daily. Irrigation was stopped.

The next day there was slight pain in the right knee but no swelling. During the following week both knees and ankles became very painful and swollen, with definite fluctuation. Temperature 99° to 102°. No drugs eased the pain in the joints; temporary relief was obtained by repeated hot soda packs.

On the seventeenth day after the joint pains began some small moist papules were noticed round the anus and coronal sulcus of the penis, with very marked resemblance to condylomata. Lesions on the mucous membrane of the lips and cheeks, oval in outline and bluish-pink in colour, resembled mucous patches. No history or scar of a primary sore: urethroscopic examination showed no sore in urethra. History of frequent exposure to infection for the past three months. Major E. G. Ffrench (in charge of the syphilis division) agreed that the case resembled secondary syphilis but advised a dark-ground examination for spirochætes from the lesions. This proved negative.

The next day some small nodular bullæ appeared on the soles of the feet and on the legs. They were quite isolated and when a few days old formed a corny mass, dark brown in colour. These masses were most marked on the dorsal aspect of the toes over the joints and on the plantar surface over the metatarso-phalangeal joints, but also occurred on the shins and thighs and over the abdomen and chest wall; a few on the arms and hands. The diagnosis of keratosis was obvious, but the lesions on the penis, anus, and in the mouth were still thought to be syphilitic. Wassermann blood test was ∓ −. Following a provocative dose of 0·6 g. novarseno-benzol (Billon) the Wassermann showed a clear negative. The diagnosis of syphilis was held in abeyance.

As nothing had seemed to influence the rheumatism I gave 2½ c.cm. intramine intramuscularly. There was a good deal of pain at the site of injection but the joint pains

were relieved. The following day I examined the prostate again; tenderness not so acute. I gave a gentle massage. Some pus was obtained and in the urine were many shreds of pus. The intramine was repeated every four days for six doses, posterior irrigation with 1/8000 pot. permang. started, and every five days I massaged the prostate, which improved rapidly. At the end of a month the patient felt much better; the joints were almost normal; no evening rise of temperature. He was allowed up and walked on sticks for about half an hour daily. The prostatic massage was proceeded with for another 15 days. He could then walk well without a stick; no pain or swelling in the joints; lesions in the mouth, on penis, body, legs, and arms had disappeared; no urethral discharge. Irrigation was stopped, and three successive examinations of the urine for gonococci after prostatic massage proved negative. Wassermann was again negative.

In another week he was transferred to a convalescent depôt and three weeks later was found fit for general service.

A CASE OF PELVIC SARCOMA

INVOLVING NERVES AND PRESENTING FEATURES OBSCURING DIAGNOSIS.

BY J. HAMILTON HART, M.R.C.S., L.R.C.P. LOND.

THE following case, which showed some unusual characteristics obscuring diagnosis, may be of interest.

The patient, a married woman, aged 49 years with no children, who had always been healthy, first consulted me in September, 1917. She then complained of pain in the lumbar region and the back of the right thigh. She was treated with salicylates and the pain improved. She again consulted me on Feb. 17th, 1918, for pain, mostly located in the front of the right thigh, of about two months' duration, and gradually getting worse, and accompanied by weakness of that leg. I found the right thigh muscles wasted, the thigh being one inch smaller than the left; there was distinct loss of power in flexing the thigh and great pain was caused by this movement in the region of the anterior crural nerve, but no definite tenderness was made out. Abdominally, a large tumour extending up from the pelvis a couple of inches above the umbilicus, and presenting the characteristics of a uterine fibroid, was found. No tenderness or pain was noticed at this examination.

Dr. J. S. Fairbairn saw the case with me on July 20th and confirmed my diagnosis of fibroids. Although the pain and illness of the patient could not be fully explained by the presence of the fibroid, he advised an operation, both with a view to the removal of the tumours, making certain of their nature, and to the complete exploration of the abdomen and pelvis. The patient was moved to a nursing home on July 24th, and it was then found that she had a temperature varying from normal in the morning to about 100° F. at night. Abdominal hysterectomy was performed on July 27th, the uterus and appendages, with the fibroids, weighing 7½ lb. Search was made for any sign of other growth in the abdomen and pelvis, but nothing was found. The abdomen was closed and healed by first intention; the patient stood the operation well.

After the operation the temperature rose to 100° in the mornings, to 102° at night, and the pain in the right thigh persisted.

On Sept. 15th slight swelling and tenderness over the right femoral vein was detected, with œdema and puffiness of leg and ankle. The patient, who had been improving in general condition, now commenced to flag.

On Sept. 24th she was seen by Dr. J. E. Knox, on my behalf, as I was away; he found her in a collapsed condition; temperature 101°; pulse 130, weak. The right iliac region was found to be occupied by a large fluctuating swelling, thought to be an abscess. Vaginal examination showed that the right side of the pelvis was filled by a soft swelling bulging inwards from the lateral pelvic wall. A second operation was performed by Dr. Fairbairn. An incision was made down into the swelling, which was found to be retroperitoneal arising out of the pelvis, consisting for the most part of a large hæmatoma in which were masses of soft jelly-like growth, bled freely on handling, and apparently arose from the lower and posterior part of the pelvis. The condition was recognised as a vascular sarcoma, and as there was free bleeding the cavity was plugged and closed. The patient died on Sept. 26th.

A portion of the growth was sent for microscopical examination with the following report: "This material is much altered by hæmorrhage and early necrosis, but we think it must be a soft, highly vascular sarcoma. It is composed of very uniform round cells with deeply staining nuclei in the scantiest of stromas. The blood-vessels are wide and thin walled. There is no evidence to show whence it originated."

Remarks.—This was a case of sarcoma apparently arising from the deep tissues of the pelvis and pressing on the nerve roots, and after removal of the fibroids of very rapid growth. The unusual features are: the pain in the back and leg of some months' duration, and which was the cause of the patient seeking advice. Nerve pain and muscular wasting being, as a rule, a late symptom of malignant growths, it was unusual that the growth in this case was not able to be found at the time of the operation. In the examination the mass of fibroids was discovered, but being quite movable and not impacted in the pelvis were not considered sufficient to explain the nerve effect. The operation was done to exclude the possibility of the fibroids being the cause, and to make sure that the mass was not a malignant ovarian growth adherent to the uterus, and to explore the abdomen and pelvis for a possible cause.

The urinary condition was thought to be a possible explanation of the fever and pain, an infective pyelitis caused by pressure of an enlarged uterus, giving rise to obstruction of ureter, as occurs sometimes in the pyelitis of pregnancy. The femoral thrombosis was evidently caused by the invasion of the veins by the growth and was rapidly followed by the formation of a large hæmatoma, which arose as the result of leakage from the vein or breaking down of the growth, and which was at first thought might be an abscess.

The pyrexia, at first of slight degree and higher later on, tended to bear out an infective process, either pyelitis or cellulitis and pelvic abscess, although such pyrexia is sometimes met with in sarcoma. The soft, jelly-like nature of the growth and its probable origin in the deep structure of the pelvis probably explains why it was not detected until erosion of the vessel and formation of a hæmatoma.

In conclusion, I have to thank Dr. Fairbairn for his notes on the second operation, at which I was unfortunately unable to be present. The pathological reports are by the Clinical Research Association.

East Molesey.

TWO CASES OF

UNILATERAL HYDROTHORAX DUE TO DISEASE BELOW THE DIAPHRAGM.

BY W. GIFFORD NASH, F.R.C.S. ENG.,
SURGEON, BEDFORD COUNTY HOSPITAL.

THE two cases related in this note must be very unusual, as I cannot find any reference to a unilateral hydrothorax being produced by subdiaphragmatic disturbance. In the first case cure was effected by removal of the cause, and in the second recovery took place after numerous aspirations although the cause persisted.

CASE 1.—In 1906 Mr. H. C. Strover, of Sandy, Beds, asked me to see a woman, aged 45, who had a large ovarian cyst and pleural effusion. The abdomen was filled by an immense ovarian cyst. There was much dyspnœa due to the upward pressure of the cyst and effusion into the left pleural cavity. The patient was admitted into a nursing home, and on March 4th, 1906, I withdrew 85 oz. of clear fluid from the left pleura; 11th, 75 oz.; 18th, 65 oz.; 26th, 55 oz. It was evident that the pleural effusion would recur, so on March 28th I operated and removed a very large multilocular left ovarian cyst. The pleural effusion did not recur and the patient was quite well when seen in June, 1918.

CASE 2.—A patient, aged 50, a chronic alcoholic with an enormously enlarged liver and ascites, was found in April, 1917, to be suffering from effusion into the right pleural cavity. The following were the results of aspiration of the pleural cavity: April 20th, 60 oz.; May 16th, 80 oz.; June 26th, 60 oz.; July 31st, 100 oz.; August 28th, 70 oz.; Oct. 22nd, 85 oz.; Dec. 11th, 80 oz. Improvement then gradually set in, and it was not again necessary to aspirate the pleura, although the alcoholism and liver condition remained the same. There was never any left pleural effusion. When last examined in December, 1918, there was no trace of any pleural effusion, and the right lung was acting perfectly. The liver was much enlarged and nodular, and there was a moderate amount of ascites. The amount of whisky consumed was about a bottle a day, besides other alcoholic drinks.

In neither case was there any cardiac or renal disease, and no suspicion of tuberculosis. The effusion was a gradual one and free from any inflammatory symptoms. I can only conclude that pressure upwards of the diaphragm in some way led to the pleural effusion.

Bedford.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

Transfusion in Diseases of the Blood.

A MEETING of this section was held on Feb. 25th, Dr. G. NEWTON PITT being in the chair.

Dr. O. LEYTON read a paper on Transfusion in Diseases of the Blood. Although he had transferred more than 60 litres of blood from donors to recipients, he did not feel himself to be in a position to make any dogmatic statements as to the efficiency of transfusions in this regard. The main object of the paper, based on 100 transfusions which he had undertaken, was to record the method adopted and the results obtained.

His experience began seven years ago by the transference of blood from an erythræmic patient to one suffering from pernicious anæmia. A 20 c.cm. syringe was fitted with a three-way tap, to which were attached suitable rubber tubes and appropriate needles. The whole apparatus was washed out with liquid paraffin and drained. Blood was drawn from the erythræmic patient and directly injected into the vein of the anæmic one. After 40 c.cm. had been injected the latter complained of severe cramp in his limbs and the transfusion was stopped. The symptoms subsided after about a quarter of an hour, and it was found that the red blood cells had increased from 1¼ to 2 millions per c.mm. In the absence of a knowledge of Moss's work on iso-agglutinins the symptoms were ascribed to obstruction of capillaries of the central nervous system by minute quantities of liquid paraffin. The patient felt so much better that he desired another transfusion. On this occasion care was taken to expel all excess of paraffin and a glass window was put in the tube close to needle to ensure that no air was injected. 80 c.cm. of transfused blood led to the same symptoms as before together with nausea, vomiting, and severe palpitation. The donor belonged to Group 2 whilst the patient was of either Group 4 or 3. No lasting benefit followed.

The Multiple Syringe Method.

Being desirous in the case of a patient with recurrent pernicious anæmia of carrying out a series of transfusions, he decided to use the multiple syringe method so as to avoid cutting or obliteration of veins. The patient, whose blood was of Group 4, was *in extremis*. There was no difficulty in transferring 200–300 c.cm. by this method, but the blood in the needle in the donor's vein then clotted and a fresh needle had to be inserted into a fresh vein. To obtain 600 c.cm. the donor had to be pricked at least three times, and sometimes, when fright hastened the clotting, even four or five. Needles were therefore made with cannulæ; if the blood in the cannula clotted, that cannula was withdrawn and a fresh one inserted. By this means an unlimited quantity of blood could be obtained by pricking the donor once. Needles and cannulæ of various gauges were made. It was essential that the needle should be sharpened every time before use and wise for the operator to sharpen it himself. The cannula should project about 0·5 mm. beyond the point of the needle, and the end of the cannula should be rounded to prevent damage to the wall of the vein. The syringes were of 20 c.cm. capacity and had attached about 10 cm. of rubber tubing of about 1 c.cm. capacity. A nozzle attached the tubing to the mount of the needle. The syringes were coated with vaseline and washed out with liquid paraffin and the tubes were filled with a solution of sodium citrate (5 per cent.) and sodium chloride (0·45 per cent.) to prevent waste of blood and coagulation. The rubber tubing permitted slight movement of the syringe without damage being done to the vein. If the blood showed a tendency to clot the citrate solution was caused to mix with the blood by shaking the syringe slightly. The solution should be made with water sterilised immediately after distillation. Vessels containing sterile normal saline should be near the recipient and donor in case the rates of drawing and injecting blood failed to correspond, for the interval might be filled up by passing saline through the cannula, thereby preventing clotting in the vein.

The introduction of the needle was facilitated by distending the vein by applying a pneumatic armlet and compressing the air in it to the diastolic blood pressure of the donor or patient respectively. The arm should be kept warm until all was ready, and the pressure should not be released until the cannula had been passed through the needle.

Selection of Donor.

It was essential that the donor belonged to the same group as the recipient, as shown by related cases. He had heard of a fatality following the transfusion of blood from a donor taken at random, and even if donors of Group 4 only were utilised there must be the risk that the serum of the blood injected might hæmolyse and damage the patient's red cells. Donors must be free from malaria, syphilis, and tuberculosis. He preferred a donor unacquainted with the patient, because frequent transfusions might be necessary, and the donor might falsely assert that he was feeling quite well in order to supply further blood to a relative or friend. If only one transfusion was anticipated there was no reason to avoid a relative as a donor.

The preparation of the donor consisted in reassuring him that he would feel no ill-effects, and that the amount of blood to be taken was less than half of that which he could lose without discomfort. He usually gave him a cup of coffee shortly before transfusion, and encouraged him to smoke during the operation. If the donor became frightened his blood clotted rapidly, and if faint the blood ceased to flow. A short interval, during which saline was injected, was required before proceeding. There were no after-effects. He favoured using the same donor frequently.

Preparation of the patient consisted of depriving him of all but the lightest food for six hours before transfusion. The occasional rigors and slight pyrexia were less frequent and less intense if a small dose of morphine and hyoscine was given half an hour before the operation.

Results and Conclusions.

One hundred transfusions were distributed very unevenly among ten patients, one having more than 50, whilst two had one each. The immediate effect was masked by the morphine and hyoscine. Afterwards the patient felt much less ill. When there had been hæmorrhage from the bowel or uterus it ceased. The vomiting and nausea, sometimes accompanied by diarrhœa in extreme anæmia, were alleviated. The blood picture improved, the red cells being sometimes more than could be accounted for. Perhaps this was explained by polyuria, which was very noticeable during the first few hours after transfusion. The increased number of red cells might be maintained or might disappear during the next few days.

After relating cases, including some of pernicious anæmia, a case of myeloid leukæmia, and two cases of aplastic anæmia, which were treated in this way he drew the following conclusions: (1) In the majority of cases symptoms are alleviated by the transfusions; (2) in some a series of transfusions at short intervals leads to the blood becoming normal for a time; (3) perhaps in a small percentage life can be maintained indefinitely by supplying the blood at the same rate as it is destroyed; (4) in many cases the disease is progressive in spite of transfusions. The blood picture becomes worse and worse, and death is only postponed for a short time.

Discussion.

Mr. ALEXANDER FLEMING said that his experience was confined to transfusion of surgical cases accompanied by sepsis at the base in France. He had used the citrate method, transfusing from 600 to 1000 c.cm. into the recipient. There had been no untoward symptoms except in one case, when considerable distress was experienced after the injection of 100 c.cm. It was possibly explained by the transfusion being given too quickly, or by wrong classification of the donor. The surgical teaching was that the blood of donors of Group 4 could be given to anybody, since no sera agglutinated their corpuscles. He had always used members of this group. It was important to use a method where cutting down was unnecessary because it avoided needless discomfort to the donor and left no scar, which might afterwards erroneously suggest that salvarsan had been injected. The result of the transfusions had been to benefit the patients immediately. Nearly all had had a secondary hæmorrhage. In them, after transfusion, the colour returned and they felt better, an improvement which persisted. An

attempt had been made to combat sepsis by utilising the blood of recovered cases, but there was no evidence that it had any advantage.

Dr. HELEN INGLEBY'S experience of transfusion in cases of pernicious anæmia had been similar to that of Dr. Leyton. The most successful result was in a case of gastric ulcer with severe hæmorrhage, which was rapidly getting worse and seemed likely to end fatally. After the first transfusion a rigor and hæmoglobinuria occurred, but the general condition improved, and transfusion was employed on two subsequent occasions. The amount of blood she had transfused was small, varying from 100 to 10 c.cm. This raised the question whether small quantities were not as useful as large, and whether transfusion was not in part beneficial through stimulating the bone-marrow.

Dr. F. S. LANGMEAD spoke of transfusion for "the hæmorrhagic disease of the newly born," in which the procedure described by the reader of the paper was impracticable. The fact that in this disease the subcutaneous or intramuscular injection of small quantities of human serum or of human blood had very greatly improved the prognosis showed that in such cases, at any rate, the result obtained was attributable to something more than mere replacement of blood which had been lost.

Dr. NEWTON PITT said that it would be useful to determine which were the best methods and to correlate results obtained in different diseases. It was open to argument whether the transfusion of citrated blood in gastric ulcer might increase liability to hæmorrhage. In such cases horse serum alone was sometimes effective. He thought the introduction of the cannula was a great improvement on former technique.

Dr. LEYTON replied.

MEDICAL SOCIETY OF LONDON.

Congenital Stenosis of the Pylorus.

A MEETING of this society was held on Feb. 24th, Major A. F. VOELCKER, R.A.M.C. (T.), the President, being in the chair.

Mr. R. A. RAMSAY read a paper entitled "The Surgical Treatment of Congenital Pyloric Stenosis, with Special Reference to Rammstedt's Operation of Simple Incision." He held the view that the condition was a true hypertrophy and that operation offered the best prospect of recovery. Having described shortly the morbid anatomy of the condition, he showed that an operation, to be of value, must provide an efficient outlet from the stomach, the ideal method being a restoration of the natural lumen of the alimentary canal through the pylorus itself. If the continuity of the alimentary canal could be re-established the exhausting vomiting would cease and food would enter the intestine, the case becoming one of simple marasmus. There were, however, two causes of failure: (1) the extent of the wasting when treatment was undertaken, so that the patients were incapable of assimilating food, and were liable to severe or even fatal diarrhœa; the other the liability to death from shock, hitherto the chief cause of the high mortality in these operations.

Operative Measures.

The operation must be as short as possible, and to attain the desired speed the technique must be simple and involve the least possible suturing; whilst if the necessity for the control of hæmorrhage was done away with by avoiding vascular tissues and blood-vessels much valuable time could be saved. The abdominal viscera should be exposed and handled as little as possible, and all manipulations should be carried out with great gentleness. Rammstedt's[1] operation of simple incision of the hypertrophied muscle fulfilled these conditions to a greater extent than the better-known procedures hitherto more usual.

Having discussed the operations of resection of the hypertrophied pylorus and gastro-enterostomy, Mr. Ramsay stated that the remaining operations fell into a group by themselves in that they all aimed at providing an efficient communication between the stomach and the duodenum by re-establishing the natural channel through the pyloric canal. These were three in number: pyloroplasty with its modifications; dilatation, or rather divulsion, of the hypertrophied muscle; and simple incision of the constricting band. Each had an advantage in that the manipulations were limited to the pylorus and adjacent part of the stomach so that a smaller incision and less disturbance of the parts were required. He discussed pyloroplasty and its modifications introduced by Nicoll and Weber, and Loreta's operation, usually described as dilatation of the stricture but which actually included rupture of the constricting band. The latter would seem to be preferable to resection and to gastro-enterostomy in that there was less disturbance of parts since the pylorus and adjacent parts of the stomach were alone dealt with; there was less suturing and no hæmorrhage, so that the duration of the operation was shorter and the subsequent shock diminished. Compared with pyloroplasty, divulsion lacked the serious difficulty of technique met with in the former procedure in connexion with the folding and suturing of the thickened muscle. There was no distortion of the parts in divulsion, and if performed with care and deliberation very little force need be used.

Rammstedt's Operation.

Rammstedt's operation, in his opinion, had very definite advantages when compared with any of those he had already described. In it the hypertrophied muscle was incised from the peritoneal surface as far as the submucous layer, the mucous membrane being left intact and the stomach not opened. The anatomical result to the pylorus was the same as when rupture of the constriction by dilators was carried out and depended upon the same details of morbid anatomy—namely, upon the tendency of the divided muscle to widen the incision by its contraction and upon the redundancy of the mucous membrane. Rammstedt's procedure had been extensively tried in the United States with good results. At Dr. Cautley's suggestion, he (the speaker) acquired the details of the technique, especially from two papers by W. A. Downes,[2] of New York, who gave a very clear and detailed description. He himself had performed it on three occasions. Mr. Ramsay then gave a detailed description of his method as follows:—

Previous to the operation subcutaneous infusion of saline is given and the limbs bandaged, measures which have in view the prevention of shock; immediately before the anæsthetic is started the stomach is washed out; in operations which entail an opening into the lumen of the stomach this is necessary to prevent soiling of the peritoneal cavity by the gastric contents, but it is of great assistance in Rammstedt's operation, since in the first place an empty stomach is easier to handle than a full one, and secondly the collected and stagnant food does not pass, when the obstruction is relieved, into the intestine, where it might help to set up the diarrhœa which is not uncommon, even without such an obvious exciting cause.

The question of the anæsthetic is of great importance in these cases. The patient is usually in an unfavourable condition for an abdominal operation or even for an anæsthetic; and yet to enable the operation to be rapid and satisfactory the temptation to keep the patient too lightly under must be resisted, otherwise there may be straining, especially at the moment of closing the abdominal wound, when much time may be lost if prolapse of the abdominal contents occurs. The choice of anæsthetic is made with a view to the counteraction of shock, for which reason open ether is probably the most suitable. In my cases this important part of the operation was in the hands of Mr. F. D. Bennett, who, on each occasion after commencing with chloroform, continued and finished with open ether, and I consider that the successful reduction of shock to a very slight degree was largely due to the careful and helpful manner in which he conducted the anæsthesia.

Description of Operation.

The patient having been anæsthetised the abdomen is opened by an incision 1 inch to 1½ inches in length made in the middle line from the tip of the ensiform cartilage vertically downwards. The advantages of this incision were demonstrated to me by Mr. Burghard who has found it particularly suited to cases of this nature on account of the relative speed and facility in closing it at the end of the operation. It is made in the middle line on account of the absence of blood-vessels, few and usually none being met with that require ligature. The possibility of post-operative hernia is negligible in the upper part of the abdominal wall in an infant, so that an incision guarded by muscle which

[1] Med. Klin., 1912, No. 42, p. 1702. Zeit. f. Chir., 1913, vol. xl., No. 1, p. 3.

[2] Journ. Amer. Med. Assoc., 1914, lxii., p. 2019. Surg., Gyn., and Obst., March, 1916, p. 251.

would require more time and involve measures for the control of bleeding is unnecessary. On opening the peritoneal cavity only the surface of the liver is exposed; by means of a finger hooked under its margin this organ is rotated upwards and the anterior wall of the stomach comes into view. The advantage of this manipulation is seen at the end of the operation, for when the pylorus is returned to the abdomen the liver drops back into its normal position, and so intervenes between the abdominal wound and the intestines and omentum, their tendency to prolapse being thus prevented much more effectually than by the use of any intestine guard or other instrument. This incision is well adapted to all the operations on the pylorus already described, and is always used by Mr. Burghard when performing divulsion of the stricture.

The stomach having been exposed in the manner just described, its anterior wall is picked up with dissecting forceps and drawn out of the wound. By means of gentle traction on this part of the gastric wall the pylorus is brought up to and out of the abdominal incision, the rest of the stomach being returned to the peritoneal cavity. The diagnosis having now been confirmed, the pyloric swelling is held in the left hand and a longitudinal incision is made upon its anterior aspect; this incision should be placed midway between its upper and lower borders where the pyloric and right gastro-epiploic arteries respectively lie; branches of these are seen running transversely around the pylorus and between their terminal twigs is a non-vascular area through which the incision should pass. The incision is first made through the thickest part of the muscle, and should be extended towards the stomach where the transition to normal tissue is gradual; on proceeding to a greater depth, the mucous membrane is ultimately exposed at some part of the wound, and at once bulges between the edges of the divided muscle; with this as a guide the incision is carried to the same depth for the whole extent of the thickened band, the duodenal end of the stricture being divided last and with great care, since the sudden termination of the hypertrophy in this situation increases the risk of wounding the mucous membrane. While making the incision the fingers of the left hand draw the edges apart as one proceeds, so that the deepest part is always clearly seen and the mucous membrane easily identified as soon as it is exposed. The complete incision is from three-quarters of an inch to an inch in length, and its margins are separated to the extent of nearly half an inch by the retraction of the divided muscle fibres. Into the gap so formed a pouch of mucous membrane prolapses, filling it up and thus relieving the obstruction to the lumen of the pyloric canal. Little, if any, hæmorrhage occurs if the site of the incision is chosen as I have described it, but should a small vessel ooze, a hot sponge is usually sufficient for its control. The pylorus is now returned to the abdomen, the liver allowed to rotate into its normal position, and the wound in the abdominal wall sutured. Prolapse of intestine, or more especially of omentum, may delay this stage of the operation, but if the parietal incision has been made as already described and if the first sutures are inserted at the lower end of the wound where prolapse is most likely to occur, valuable time is saved, and as speed is such a great factor of success in these cases, I consider this an important detail of the technique.

On return to bed the usual measures are taken to combat shock, which although of a relatively slight degree is nevertheless always to be feared, lest its increase leads to a fatal result. Feeding is begun at once, with one drachm every quarter of an hour, increasing the quantity and interval rapidly till, at the end of 48 hours, 2 ounces every two hours are being given. The stools show that the passage of food from stomach to intestine occurs quickly, and therefore no delay in feeding is necessary.

The final result depended upon the degree of wasting present, and therefore the earlier the operation was done the more hope was there of success of the subsequent treatment by suitable feeding. Of Mr. Ramsay's three cases two had died, but in neither instance from the post-operative shock hitherto so frequent and fatal. All three recovered from the effects of the operation and gave evidence of the patency of the pylorus, death occurring in one case after six days from inability to assimilate and in the other after four and a half weeks from ileo-colitis. With a rapid method of surgical intervention such as this, applied sufficiently early, he felt that the results of treatment in cases of this nature could be greatly improved, and he hoped that his paper would lead to a trial of Rammstedt's operation.

Discussion.

Mr. D'ARCY POWER agreed that pyloroplasty and Loreta's operation were much too long and complicated, and he had given them up in the case of young children. It was clear that the earlier the operation was done the better for success. Given the opportunity, he should try the operation just described. It was important that some agreement should be arrived at as to the optimum time for surgical treatment.

Mr. H. TYRRELL GRAY said that it was difficult to decide when to operate. He had performed Rammstedt's operation in from 15 to 20 cases, and agreed that it was the best surgical procedure. All his first four cases recovered. After a phase of disappointing results they were now much better again and were improving. Loreta's was essentially an operation for early cases, but Rammstedt's had the advantage of being equally suitable later. Results would depend upon the time of the operation and the after treatment. The time occupied over the operation was not in itself sufficient to account for its advantage.

Dr. E CAUTLEY had suggested the operations and watched them being performed by Mr. Ramsay, and agreed that the results were good. The procedure was rapid, produced slight disturbance, and procured a wide pyloric canal. Cases met with in private practice were seen earlier and did much better. This was partly due possibly to better conditions, but the main advantage was that an operation could be done earlier. He thought that it should be done as soon as a clear diagnosis was made. He was not satisfied with a diagnosis of hypertrophic stenosis of the pylorus unless a tumour could be felt or the symptoms were very characteristic. Cases of so-called recovery under medical treatment alone were not generally, in his opinion, genuine cases. Many of them were examples of mucous catarrh of the stomach. When the hypertrophy was sufficient to cause obstruction he was more than doubtful of recovery under medical treatment. With Rammstedt's operation he was inclined to resort to surgical treatment even when the diagnosis was less definite, as no serious harm resulted. The after-treatment was in no sense special, but that suitable for an ordinary infant of corresponding age and condition.

Dr. F. S. LANGMEAD took the view that recovery by medical treatment alone was by no means uncommon, and was all that was necessary in the less severe cases. He had frequently seen undoubted cases in which a pyloric tumour was distinctly palpable regain good health without operation. In almost every case in which, with the usual history, gastric peristalsis was characteristic and well defined, a tumour could be felt sooner or later. He disagreed, however, with those who deferred operation until too late or opposed surgical treatment in these cases. If an infant of 2 to 3 months old when first seen weighed only 6–7 lb., it was a case for operation without delay. If, on the other hand, the baby's condition was fairly good medical treatment could be tried and might prove quite effective. If after one to two weeks' trial the weight was stationary or declining operation should be no longer deferred. The need for operation might also become indicated by the degree of vomiting and the small amount of the stools. In breast-fed infants he had found that restricting the feeding to 5 minutes at hourly intervals sometimes led to prompt improvement. The breast should be emptied after every third feed with a breast-pump. Gastric lavage once or twice a day according to the amount of mucus and residue was the only medical treatment beyond dietetic of any definite value. For artificially fed infants he preferred small, frequent feeds of peptonised milk.

The PRESIDENT had had under his care 33 cases of the condition, and had analysed them carefully. The analyses did not indicate what were the causes of death or what determined the degree of wasting. The mortality had been 60 per cent., and no case had been treated surgically. He had hesitated to advise operation, for he could never assure himself that the obstruction at the pylorus was the cause of the wasting. The prognosis depended very much on when the patients came for treatment. Weight was an important factor in prognosis. He had not found that one variety of food suited better than others. Until he was confronted with better figures for operative treatment than those attained by medical measures he would not change his opinion to one favouring the former.

A MEETING of the West London Medico-Chirurgical Society will be held to-night (Friday), at 8.30 P.M., in the society's rooms, West London Hospital, when a paper will be read by Dr. F. G. Crookshank, entitled "The Importance of Symptoms."

Reviews and Notices of Books.

Crime and Criminals: Being the Jurisprudence of Crime—Medical, Biological, and Psychological. By CHARLES MERCIER, M.D., F.R.C.P., F.R.C.S. With an Introduction by Sir BRYAN DONKIN, M.A., M.D. Oxon., F.R.C.P., Member of the Board of Directors of Convict Prisons; late one of H.M.'s Commissioners of Prisons. London: University of London Press, Ltd. 1918. Pp. 292. 10*s.* 6*d.*

ACCORDING to Austin, "the matter of the science of jurisprudence is law, strictly so-called," a definition which need not prevent a writer on jurisprudence from including in a treatise upon crime and criminals the consideration of conduct not punishable under the criminal law, but which he would wish to see so punished. Dr. Mercier claims in an early chapter more than a licence or qualification to instruct the Legislature as to what acts and omissions ought to be punished and what ought not, declaring that "a jurisprudent would neglect his duty, a book on jurisprudence would lack its most important factor, if this instruction were not imparted," for to him, not unreasonably, jurisprudence is "the science of law which discusses not only what the law is, but also what it ought to be." He accordingly turns to first principles to discover the foundation upon which the law rests, and to determine in what directions it may be improved. It does not follow, however, that the Legislature, or, indeed, the reader will be brought to the same conclusions as Dr. Mercier, by studying his chapters on the nature of crime, on kinds of crime, on private and racial offences, and on criminals. Every reader must find these chapters of interest, together with those on the prevention, detection, and punishment of crime, even though he may not accept all the views to which the writer gives the weight of his approval, or of which he claims to be the originator, but Dr. Mercier is a learned, stimulating and amusing writer. One of the most convincing chapters is that in which a comparison is drawn by Dr. Mercier between his own doctrine of the causation of insanity as due in varying proportions to the two factors of heredity and stress, and the proposition, equally his own, that crime is due to "temptation or opportunity, the environmental factor or stress, acting upon the predisposition of the offender, the inherent or constitutional factor." "The more potent the one factor the less of the other will be needed to bring about the result," he says, and he works out the thesis in an eminently clear and readable manner.

If it be a legislator, however, or, shall we say, an average Member of Parliament, whom we imagine as turning to Dr. Mercier's work, with a view to bringing in a Bill for the amendment of the criminal law, we picture him as a little disappointed by the nature of the advice given, as the result of psychological analysis of the criminal and his crimes. Sir Bryan Donkin, in an appreciative preface, prepares us for what we venture to regard as the principal recommendation which Dr. Mercier desires to make, and one of more importance than the suggestion to treat as larceny the "stealing of the use of a thing." "Dr. Mercier," writes Sir Bryan Donkin, "considers that breach of contract and false imprisonment also should be crimes: and he seems to have reason on his side." On pages 172 and 175 will be found the author's statement of his opinions, or rather his assertion that breach of contract "undoubtedly" ought to be a criminal offence, and that "the exclusion of false imprisonment and breach of contract from criminal offences is a blemish in English jurisprudence." This will be rather startling to those who deprecate the tendency of modern legislation to increase the number of acts in respect of which proceedings in criminal courts may be taken. It may also strike them from a merely practical point of view that the criminal docks of the country would not be able to contain the persons charged with this new vast class of offences, while the Bar would be seriously depleted by the appointment of the necessary number of stipendiary magistrates. Breach of contract may satisfy every definition of crime. Dr. Mercier says it does. It may also be injurious to society; but even this does not prove, nor does he, that it is, in fact, desirable to treat what has hitherto been regarded as a matter concerning the two parties to the contract, as an offence against the State. Why, also, it may be asked, should breaches of contract among civil causes of action be rendered crimes, and not torts as well; or, rather, why of all torts should false imprisonment alone be selected? This cannot be in order to diminish the number of trivial prosecutions that would certainly follow if breaches of contract were made criminal, for in that case malicious prosecution would have been included with false imprisonment. However, we can express entire agreement with the opinion, also to be found on p. 172, that the criminalising of wrong acts now remediable only by civil proceedings is not likely to be resumed, though whether this is due to a lack of logical completeness and systematic order, inherent in English law and the English character, is more doubtful.

Dr. Mercier is given to statements of a character which challenges contradiction. He devotes many of his observations to the expression of contemptuous dissent from the doctrines of Lombroso and his school, but gives no references to the works of Lombroso such as would prove that a particular criticism is deserved. For example, at p. 38, he refers to the prevalence of smuggling at one time among the inhabitants of our coasts. These, he points out, became criminals under the then existing laws, and he describes the physical characteristics which, "if the doctrines of Lombroso, Garofalo, and the rest of the continental criminologists are true," they ought to have developed. "But did they?" he asks triumphantly—a "num" question, as the Latin grammar would have it. Well, first, the rejoinder might be made, "Did Lombroso and the others, in writing of criminals, define them in such a way as inevitably to include the early nineteenth century smugglers of our southern counties?" And secondly, the inference which he would have us draw is not justified by the writings alluded to—at least, in our opinion.

Dr. Mercier has written an able, useful, and original book, which has deservedly earned for him, and for the second time in succession, the Swiney Prize. His teaching gains by his clearness and well-justified self-assurance, but its acceptance is sometimes rendered unpalatable by his methods of demonstration.

Report of the Work of the Invalided Soldiers' Commission, Canada. May, 1918.

THE experiment of giving to the Army Medical Corps the medical work in the hospitals and institutions of the Commission charged with the care of discharged soldiers was found to be unworkable, and since the early part of 1918 these men have been placed under the direction and control of the Minister of Soldiers' Civil Re-establishment. The Commission, in addition to caring for all officers and soldiers suffering from diseases either incurable or likely to be of long duration, such as tuberculosis, epilepsy, paralysis, and mental disorders or relapses of their former complaint, retains the control of vocational training in the hospitals before the men are discharged and of subsequent re-education. The Commission will develop the vocational branch, establish a distinct medical service of its own, and will arrange to secure closer coöperation with the various Provincial Commissions charged with the duty of finding employment for returned men. The total number of hospital beds retained by the Commission is 5575. A novel feature is the employment of dietitians; three organising dietitians have been appointed and dietitians have been placed at a number of the Commission's hospitals; ladies who have taken University courses and have specialised in this subject are employed. They furnish detailed returns as to the consumption of the various articles of food; in this way a check is maintained on the quantity of food consumed and the supply of the correct amount of fat and other essentials to curative diet ensured. At all the larger institutions a recreation building has been provided; the main hall is equipped with a stage and a kinematograph, the lower floor being given over to classrooms, workshops, and bowling alleys. One permanent home with accommodation for 50 disabled men has been established at Toronto.

A factory for the manufacture of artificial limbs is maintained by the Commission. The artificial legs are made of wood obtained from the brittle willow and golden osier; the wood is cut into bolts about 22 inches long and bored through the centre in order to season without "checking." The bark is removed and the ends painted; the bolts are then left to season in the shade in the open air for two years. After this they are kiln-dried and kept absolutely dry till made up

into an artificial limb. At present the Commission issues an artificial arm with a working hook capable of holding a knife, fork, or pen, and with which a man can pick up articles and dress himself. The hook can be exchanged for a gloved hand with a movable thumb which enables the man to hold an umbrella or valise or carry his coat on his arm. Splints, braces, orthopædic shoes, and other orthopædic apparatus are made at the factory. Several returned soldiers are being taught various branches of the making of artificial limbs and orthopædic shoes. Men who have incurred disabilities on service which require appliances, such as orthopædic shoes, trusses, spectacles, rubber bandages and belts, are granted an annual credit for renewals.

Reference is made to the difficulty of diagnosing epilepsy. Convulsions, apparently typically epileptiform, are often found to be due to other conditions than epilepsy, the most frequent of these being hysteria. "Those cases developing seizures following exposure at the front, but without a previous history of epilepsy, and in which, on being invalided home, the seizures tend to diminish, should be regarded with great suspicion." A number of feeble-minded were enlisted. Certain of the higher grade defectives who had been able to carry on the simpler forms of manual labour, including farm work, proved totally incapable of carrying on in the Army. The writer of the report points out that the war has resulted in the medical examination and supervision of a large proportion of the male population, and has furnished information concerning a considerable number of defectives. Use should be made of this and definite after-care plans formulated for at least two well-defined groups of ex-soldiers, epileptics and feeble-minded.

Surgical Aspects of Typhoid and Paratyphoid Fevers. Founded on the Hunterian Lecture for 1917, amplified and revised. By A. E. WEBB-JOHNSON, F.R.C.S., D.S.O., Temporary Colonel, A.M.S. With Foreword by Lieutenant-General T. H. GOODWIN, C.B., C.M.G., D.S.O., Director-General, A.M.S. London: Henry Frowde, Oxford University Press; Hodder and Stoughton. 1919. Pp. 190. 10*s.* 6*d.*

THIS volume is an amplified account of the surgical aspects of typhoid and paratyphoid, which formed the subject of a Hunterian lecture published in our columns on Dec. 1st, 1917. Numerous illustrations, both black-and-white and coloured, embellish the text, and the book can be confidently recommended as a trustworthy guide to a new and interesting subject.

Diseases of the Heart and Aorta. By Dr. A. D. HIRSCHFELDER. Third edition, revised. London: J. B. Lippincott Co. 1918. Pp. 732. 30*s.*

IN the preface to the first edition the author says that his aim has been "to present side by side the phenomena observed at the bedside and the facts learned in the laboratory in order to show how each supplements the other in teaching us how to observe the patient and to direct the treatment." This principle has been elaborated throughout the book, and in this third edition Dr. Hirschfelder has faithfully correlated the fruits of recent research with the clinical facts upon which they bear. The result is a volume in which the reader in search of light on problems of the pathological physiology of the circulation may be sure of finding help. It is an industrious and exhaustive compilation, and one which will be welcome to everyone interested in the study of cardiology. The student of clinical medicine, however, will find that the facts are presented more from the viewpoint of the laboratory than from that of the bedside. Under such circumstances it is not surprising that a large proportion of the writers quoted are Teutonic. Dr. Hirschfelder has indeed done his best to include the researches of America and Britain, but it is a little disappointing to find no reference to the work of Thomas Lewis and his colleagues in the chapters which discuss the military heart.

A striking feature of the book is the wealth of diagrammatic illustrations. Many of these are of the utmost value, and express in a lucid form that application of physiology to medicine which is the dominant purpose of the author. Dr. Hirschfelder is to be congratulated on the success of his book. If in his next edition he were to secure the collaboration of a clinician, he might give us the best account of cardiac disease in the English language.

Pye's Surgical Handicraft. Edited and largely rewritten by W. H. CLAYTON-GREENE, F.R.C.S. Eighth edition, fully revised, with some additional matter and illustrations. Bristol: John Wright and Sons, Ltd. 1919. Pp. 640. 21*s.* net.

A NEW and revised eighth edition of this useful manual has just been published. The author has taken advantage of the work of Sir Robert Jones in the section dealing with orthopædic cases. In this and other sections the letterpress is full of information invaluable to the student, the house surgeon, and the general practitioner. The book is exceedingly well got up; the illustrations are clear and helpful.

A Medical Field Service Book. By C. MAX PAGE, M.S. Lond., F.R.C.S. Eng. With a Foreword by Sir GEORGE MAKINS, G.C.M.G., C.B. London: Henry Frowde, Hodder and Stoughton. 1919. Pp. 160. 6*s.*

THIS is a very useful vade mecum for a medical officer in the field, dealing as it does with cases of disease and wounds prior to the entrance to the casualty clearing station. Similar text-books have been peculiarly conspicuous by their absence. The book emphasises the wide sphere of knowledge required by a medical officer in a forward area, and in giving samples of the information needed the author has produced a useful volume. He has quite rightly dealt with minor ailments met with in the line and the method of their treatment, and has not overburdened the reader with the more elaborate methods of dealing with wounds, the principles of treating which are much the same in every zone of activity. The book is a valuable addition to war literature.

A Treatise on Clinical Medicine. By WILLIAM HANNA THOMSON, M.D. Second edition. London and Philadelphia: W. B. Saunders Company. 1918. Pp. 678. 24*s.* net.

IN the second edition of this large work Dr. Thomson lays particular stress on the application of different kinds of rays in the diagnosis and treatment of carcinoma and sarcoma. Another special feature is the classification of diseases adopted by the author. Under the heading, "Infections Communicable by Intermediate Carriers," are included (together with typhoid and Asiatic cholera) pneumonia, tonsillitis, chorea, cerebro-spinal meningitis, beri-beri, and meat poisoning. This is the arrangement of a zealot or a prophet, and the reader is driven to the former assumption on finding scurvy, infantile scurvy, and cyanosis classed under Diseases of the Blood, "hiccup" under Diseases of the Respiratory Apparatus, dysentery under Intestinal Disorders. And the surprises could be indefinitely prolonged. The book is designed with the object of "serving the physician while he is actively engaged in the performance of his professional duties," but little space has been given to the pathology of the various conditions, without a sound knowledge of which the significance of the important symptoms, upon which such stress is laid, cannot well be appreciated. Some trained observation and some original ideas are to be found in the book, but it is not one for the practising physician to read without discrimination.

Diabetes and its Dietetic Treatment. By B. D. BASU, Major, I.M.S. (retired). Ninth edition, revised and enlarged. Allahabad: The Panini Office, Bhuvaneshvari Ashram. 1918. Pp. 104. Rs. 1.8.

A NEW edition of this little book has lately appeared, the ninth since 1909. In it the author develops his view that diabetes is, in a large proportion of cases, caused by alimentary toxæmia produced by (1) errors in diet; (2) disordered conditions of the digestive juices; and (3) toxins discharged by the bacteria in the alimentary canal. He regards the increase in the incidence of diabetes among the people of India as due to factors such as the increased export of wheat from India to the United Kingdom, and consequent dependence of the people of India on inferior food grains for their bread; the importation into India of potatoes; tea drinking; the nervous strain connected with modern life, which is a well-known cause of disordered digestion. With regard to the last-named he writes suggestively:—

"India is a country where, from time immemorial, people were accustomed to take their principal meal in the middle of the day, after which they used to spend an hour

or two in *siesta*, which allowed for the proper digestion of food. Under the altered conditions of their existence they do not find time properly to chew and masticate their food, which they are obliged to bolt down as soon as they can, to attend to the studies or business in the middle of the day."

The *Tribune* (India) suggests in this connexion that "it might be worth while to make a change, at least experimentally, in the office hours, restoring the time-honoured mid-day meals at leisure," stomach disorders being practically unknown among people not used to modern office hours of business and hurried meals. Among the various forms of treatment which the author has found useful are the exclusion of meat from the dietary; starvation and purgatives; gastric lavage; banana flour; unpolished rice, from which the water has not been strained; green vegetables. One outstanding idea running through all the methods of treatment is the urgent need for foods rich in vitamines.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

ANIODOL.

(THE ANGLO-FRENCH DRUG CO., LTD., GAMAGE BUILDING, HOLBORN, LONDON, E.C. 1.)

ANIODOL is stated to consist of a stable combination of tri-methanal with allyl sulphocyanide in a solution of specially distilled glycerine. Such a compound, we find, is described in Thorpe's "Dictionary of Applied Chemistry" as the subject of a French patent in use as an antiseptic. According to our examination aniodol is a clear colourless fluid miscible with water in all proportions, which gives off a pungent gas on boiling. Tri-oxy-methylene (tri-methanal), as is well known, is a polymer of formaldehyde, and exhibits powerful germicidal properties. Associated with allyl sulphocyanide these properties are increased in aniodol. The liquid is a strong reducing agent, and the presence of the sulphur group was proved in our examination by the formation of black lead sulphide on heating aniodol with lead acetate and caustic soda. Its germicidal efficiency, according to particulars furnished, is remarkable, varying with the organism tested, the carbolic acid coefficient ranging from 25 as a maximum in the case of *Bacillus typhosus* to a minimum of 1 in the case of cholera vibrio. Aniodol may be used both externally and internally, the dilution being non-toxic, while organic matter does not appear to impair its germicidal efficiency. We have also examined aniodol powder, which contains the same antiseptic combination, starch, according to our findings, being used as an absorbent. It is practically odourless and is suggested as an efficient substitute for iodoform and similar applications.

(1) DIGALEN; (2) OMNOPON; (3) SEDOBROL; (4) THIOCOL.

(THE HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD., BASLE; AND 7 AND 8, IDOL-LANE, LONDON, E.C. 3.)

These preparations are well known, and were noticed in these columns some years ago. Certain changes in form and advances have been made, however, which may briefly be recorded in view of our examination of specimens recently submitted to us.

(1) Digalen was prepared from digitalis with the view of securing uniformity of pharmacological action of this most important drug. It thus represents the active principle of digitalis with all inert matter completely removed. Digalen is supplied in the form of a sterile, colourless standard solution of amorphous digitoxin upon which the therapeutic action of digitalis depends. There are also available tablets and ampoules containing standard amounts of this active principle.

(2) Omnopon contains the soluble hydrochlorides of the total alkaloids of opium in the proportion present in the drug itself, the principal alkaloid, morphia, occurring in each dose to the extent of about 50 per cent. Apart from its ordinary administration as an opium derivative free from unpleasant after-effects, its employment in combined anæsthesia is well spoken of. Omnopon is also supplied with scopolamine, a combination approved by some anæsthetists.

(3) Sedobrol is the outcome of a novel suggestion to combine a sedative with a nutrient. It occurs in tablet form containing sodium bromide, with chiefly soluble proteins of vegetable origin and fat. It makes a palatable cup, with saline taste, and may prove an acceptable means of administering a sedative and nutrient to the patient under, of course, the guidance of the physician. It is, in short, a bromide bouillon; it is said to be useful in insomnia, and this action may be expected.

(4) Thiocol is a soluble guaiacol derivative (potassium-guaiacol sulphonate) which has been employed in pulmonary affections and as an intestinal antiseptic. It is a non-toxic germicide. The tablets submitted gave a characteristic reaction with perchloride of iron, a deep violet colouration resulting.

(1) SOLUTION POT. IODIDE (SOUFFRON); (2) STROPHANTHUS AND STROPHANTHINE (CRISTALLISÉE).

(MODERN PHARMACALS, 48, MORTIMER-STREET, LONDON, W. 1.)

(1) Importance is attached to the employment of chemically pure iodides in medicine, and this preparation is simply a distilled water solution of pure iodide of potassium, the salt occurring, according to our analysis, to the extent of about 7 per cent. *w/v*. We found it to be entirely free from the common impurities of the iodide, while it proved stable.

(2) The use of strophanthus as a cardiac tonic has been discredited in some quarters, which, according to the French chemist, M Catillon, is due to the fact that the usual tinctures have shown considerable variations in regard to the amount of the active constituent, strophanthin, present. This drawback has been overcome by the preparation of a standardised extract of strophanthus in granule form, each containing 1 mg. of the extract with the diuretic principle. In addition, we have examined granules containing strophanthin in crystalline form (1/10 mg.), the diuretic principle in this case being excluded. French authorities and clinical records are quoted showing the reliability of these preparations.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THIS Fund was officially closed by the Executive Committee at their meeting on Jan. 30th, the formal date of closure being Feb. 10th. Since the date of the meeting the following subscriptions have been received:—

	£	s.	d.
Hampshire Pharmacists' Association (per Mr. C. H. Baker, making £56 5s.)	6	5	0
Dr. Charlotte E. Warner	1	0	0
Dr. Alfred Cox (monthly)	1	1	0
Dr. Papillon	0	10	6
Dr. Leak	1	1	0
South Australian Belgian Relief Fund (per the Agent-General for S.A.)	500	0	0
J. M.	0	10	0
Mr. D'Arcy Power	2	10	0
Mr. H. B. Morris	0	5	0

The following monthly subscriptions were received for January and also for February:—

	£	s.	d.
Dr. E. C. Morland	0	10	6
Major E. R. Fothergill, R.A.M.C.	0	10	0
Dr. J. C. Musson	0	10	0
Dr. G. Grey Turner	1	1	0
Dr. A. W. Forrest	1	0	0
Sir Thos. Barlow	0	10	0
Dr. A. E. Naish	0	10	0
Dr. A. B. Stevens	1	0	0
Dr. Luffman	0	10	0
Dr. T. L. Draper	0	10	0
Dr. F. W. Goodbody	1	0	0
Dr. A. Graham	1	1	0
Dr. W. Stewart	0	10	0
Dr. H. Whitehouse	0	10	0
Dr. Vincent Tighe	0	10	0
Dr. W. E. Good	0	10	0
Dr. H. Caiger	0	10	6
Dr. Hyla Greeves	0	10	0

It will be seen that the Fund benefits by generous monthly subscriptions for January and February, and has also received from the South Australian Belgian Relief Fund, through the Agent-General for South Australia, a munificent donation of £500. In view of the terms of the letter published on Feb. 8th from Dr. V. Pechère the Fund was closed, but these handsome augmentations are none the less extremely gratifying to the Executive Committee who know full well in how many directions the money can still be splendidly used. Dr. Pechère, as President of the Comité National de Secours et d'Alimentation (Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés), called our attention, when deprecating the sending of further subscriptions, to the fact that his society had throughout practised the severest economy in order to keep funds in reserve, inasmuch as grave necessity would continue for some time. The Fund will still be able to do a little more to decrease the toll of misery.

THE LANCET.

LONDON: SATURDAY, MARCH 8, 1919.

Dental Practice, Qualified and Unqualified.

THE Report of the Departmental Committee appointed to inquire into the extent and gravity of the evils of dental practice by persons not qualified under the Dentists Act contains recommendations which directly concern members of the medical and dental professions, and which no doubt are being closely scrutinised and criticised by them. Beyond this the report as a whole should be of considerable interest to all intelligent members of the general public; it is a pity that only a small number of them, however, may be expected to read a Departmental Report. The Committee has to some extent gone outside the terms of its reference. It has not confined itself to consideration of the present inadequate supply of qualified dentists and dental surgeons, of the expediency of prohibiting the practice of dentistry by the unqualified, and of the practicability of modifying the amount of study, time, and money now expended in qualifying for a dental career. The Committee has dealt with these subjects more or less exhaustively, and they must certainly have afforded it ample material for reflection and deliberation. It has, however, also included in its survey and in its report the question of dental disease in relation to the health of the people, having realised, as it tells us, that it would be unable to report upon its reference until it had taken evidence of the effect of dental disease upon the general health, and of the incidence of such disease at different periods of life. The consideration of these points the Committee deemed necessary in order to form an opinion upon the number and kind of dentists likely to be required in the future; and often as such proclamations have been made of recent times, we welcome the public insistence by the Committee on the fact that the care of the teeth is an essential element in the care of the health, whether of the public or of the individual. Clearly the number of qualified practitioners now devoting themselves to the practice of dentistry is not sufficient to meet the demand for their services which exists, and which ought to exist in greater degree as the public comes to regard the care of the teeth as essential to the preservation of health. We endorse warmly the Committee's recommendation that a thorough research investigation into the causes and effect on health of dental caries is needed, and pass to the measures advised for improving dental treatment for the nation which seem likely to be dealt with by the legislature in the near future.

These proposals are due to the conviction of the Committee that quack dentistry offers a profitable livelihood to any person who has the physical capacity necessary to enable him to pull out a tooth, and the commercial ability to manufacture and to sell dentures of any sort, making known his trade by specious advertisements and unscrupulous canvassing. It has been proved before them by evidence that unqualified dental practice is a source of many and dangerous injuries to members of the humbler classes of society—it is too often a form of robbery to which they fall victims with singular facility—while at the same time the universal practice of dentistry by the unqualified lowers the social status and public esteem of the dental profession, and by rendering it unattractive contributes to the shortage of qualified dentists. The carefully considered epitome of the evidence contained in the Report forms an explanation of the two most immediately important proposals of the Committee—namely, that unregistered practitioners should be forbidden to practise dentistry, and that in a new Register, in deference to their vested interests, there should be included unqualified persons who otherwise would be deprived of their means of livelihood. The unqualified have, of course, hitherto been able to practise as long as they did not describe themselves as dentists or use titles implying registration. As distinguished from individuals, the Committee has had to consider the case of dental companies with which it finds gross abuses have been associated, involving both malpraxis and fraud. As to these the recommendation is that dental companies shall not be prohibited from practising dentistry, but shall be controlled, all the operating and managing staff being required to be registered dentists, and special provision is being made to meet the case of existing companies, which will not be allowed to carry on any other business. The proposal to prohibit all practice of dentistry except by registered practitioners hardly requires argument to enforce it, and a few of the facts connected with unqualified practice noted in the Committee's Report should convince any but the most fanatical and unreasonable denouncer of so-called "monopolies." The reason for creating the monopoly in this case is the protection of members of the public, their persons and their pockets, and it may be mentioned that the establishment of a Public Dental Service is not the least interesting and important of the suggestions of the Committee, which had before it considerable evidence as to the uneven distribution of dentists in the countries of the United Kingdom and in different parts of each country.

The forming of the new Register and its enlargement by the admission to it of unqualified persons and by shortening and cheapening the process of qualification are grave matters, upon which there will be much to be said and on which opinions will be strongly divided. The Committee sums up the principle upon which it wishes to see the admission of the unqualified take place by advising that a reasonable measure of precaution shall be adopted to ensure that any person whose name is added to the Register was in *bonâ fide* dental practice before the date of this report, that this practice formed the means of his livelihood, and that he can be trusted safely to practise dentistry upon the public. It is not likely to be easy to set up and maintain consistently throughout the country a standard of *bonâ fide* dental practice, or to ascertain how far a candidate for registration can be trusted safely to practise. He will not be likely to have the capacity and skill of a practitioner registered after due training and examination, and the lowering of the general standard of registered practice will follow automatically. It is not proposed by the Committee

that the unqualified candidate for registration shall be examined, as it is of the opinion that there would be considerable difficulty in conducting such examinations: and it holds that any unregistered practitioner or dental assistant, who has been engaged continuously in the practice of dentistry by performing dental operations within the mouth for the period of five years immediately before the date of the Report, should be entitled to registration; for those of less than five years' standing an examination within a period of two years is suggested. With regard to the admission of unregistered persons who have been working in the manner defined above for five years the Committee admits that "possibly a number of not very competent practitioners may obtain registration," but apart from the difficulty of examination, which it foresees, it is of opinion that five years' professional work, combined with a satisfactory character, constitutes a vested interest which must be respected. We would suggest with regard to this that the consideration of vested interests may be carried too far in connexion with the unexamined, seeing that every privilege extended to this class is detrimental to the vested interests of the duly qualified dental practitioner. If the admission without examination, and more or less as a matter of course, of those who have acquired a vested interest by unqualified practice is to be combined with the registration of future candidates qualified by training less thorough than that of their predecessors, a general lowering of the standard will be the inevitable result; and here the advisability might be considered of making some difference in title between those who are on the Register by examination, and those who are admitted there in recognition of a good professional character of five years' duration. The ideal proposed by the advanced and scientific dental surgeons has always been that the dentist should be a qualified medical man practising dentistry as a specialty, just as the ophthalmologist practises his specialty, and this ideal has been advocated not in the interest of the practitioner, but of the public. It may not be one possible of attainment to-day, but it should not be allowed to drop out of sight. It may be beyond the reach of those now unregistered practitioners who are recommended for admission to the Register without any dental diploma whatever, but every facility should be afforded to all dentists for study after registration, and there should be every inducement for them to undertake such study. The proposal to establish a Dental Service may enable such inducements to be offered, if all posts in it are reserved for those whose qualifications are of the higher order; and qualified medical practitioners may be induced to specialise in dentistry with the prospect of combining with public service the building up of a private dental practice. In any case the Dental Service should bring within the reach of the working classes treatment such as in many districts has been out of their reach hitherto, except as a matter of charity.

The Influenza Pandemic.

LAST week at a north country petty sessions it was stated that of 140 persons attending a local dance 122 shortly fell victims to influenza in acute form and 12 died. The recrudescence of influenza in many parts of the country raises public health problems such as this, and continues to be a matter of grave concern to sanitary authorities and their officials. A great deal of work is being done by medical officers of health with the view of limiting, so far as possible, the spread of the disease, but our imperfect knowledge of the epidemiology of influenza makes it difficult to reach satisfactory conclusions on the value of the many preventive measures suggested. We may well hope that the investigation of a filter-passing virus initiated by the late Major H. GRAEME GIBSON may soon lead to more accurate knowledge of the morbific agent. Short of this the position is well set forth in the Memorandum recently issued by the Local Government Board to which reference was made in a leading article in THE LANCET of March 1st. Two well-marked waves of influenza have swept over the country in the past few months and we are now in the midst of a third. Opportunity is thus afforded for study of certain characteristics of the malady which are still obscure. The most important of these is the question of immunity. It is important to ascertain, for example, whether one attack confers immunity against subsequent attacks, and, if so, how long this acquired immunity may be expected to last. Many observers affirm that those persons who suffered from influenza in June and July of last year escaped during the subsequent autumn epidemic, or, if they were attacked, it was only in a modified and very mild form; this they attribute to immunity acquired as a result of the summer attack of influenza. If sufficient facts and figures could be adduced in favour of this hypothesis, it would be a distinct advance on our present somewhat hazy ideas on the matter. Further, with the view of arriving at a conclusion concerning the length of time that this acquired immunity—if there is such a thing—lasts, it would be interesting to know whether the persons who were attacked last summer but escaped in autumn are, or are not, victims during the present recrudescence of the disease. Any observation on the length of the incubation period and the stage of illness at which a patient is most liable to infect others would also be useful. Most health officers are at present far too busy in striving to combat influenza prevalence to be able to give their impressions on the relative value of the different preventive measures adopted, but when the results of the experience gained during the present pandemic are recorded they should form a valuable guide as to the form which future administrative measures should take.

The preventive measures employed abroad appear to be on similar lines to those adopted in this country. In America school closure was not adopted in Chicago or New York, as the public school system is regarded in these cities as one of the most important factors in the control of disease. A large number of the New York school children come from the poorest areas of the city in which the housing conditions are very bad, and for this reason they are probably less likely to contract infection at school than at home. The better ventilated theatres were used as education centres at which the public were instructed, during the epidemic, on matters relating to health. It is difficult to ascertain whether the wearing of masks by the general population is as efficient a safeguard as was at first supposed. Experiments on this matter have, we understand, been tried in a number of American cities, but there appears to be lack of unanimity of opinion as to the practical value of

the measure, though, where masks were worn by nurses and others attending on the sick, they seem to have afforded at least some degree of protection. Experimental work should help in a matter of this kind, and Dr. H. MASON LEETE'S observations at the Edinburgh City Hospital, recorded in another part of our present issue, should be read in this connexion. In view of the overcrowded condition of the London omnibuses, tramcars, and underground trains at certain hours of the day, which has probably facilitated the spread of influenza in the metropolis, it is interesting to learn that in New York such overcrowding was prevented on the subway trains by an ingenious plan "to stagger the hours of travel," by which it was arranged that different business establishments in the city should open and close at different hours, thus preventing congestion of public conveyances of all kinds.

The value of proper ventilation both in the prevention of infection and in the treatment of the disease comes out in much of the recent literature. In last week's *British Medical Journal* Dr. LEONARD HILL, F.R.S., develops his well-known views on the important influence for good exerted by cool air upon the respiratory membrane.[1] To combat the influenza infection he urges the deep breathing of cool air. An editorial article in the last number of the *New York Medical Journal* tells of certain naval recruits who were so confident of the immunity to catarrh conferred by their open-air life that they submitted to spraying of the throat and nose with live cultures of influenza—without ill result. A less dramatic story with the same moral is told in a recent issue of the *American Journal of Public Health*, where Surgeon-General WILLIAM A. BROOKS, of the Massachusetts State Guard, gives an account of an outbreak of influenza which occurred among the men on the ships connected with the recruiting service of the Shipping Board of East Boston. In order to accommodate the large number of patients a "tent hospital" was established on Corey Hill. Cold and wet weather prevailed during the first few days and the patients had, on this account, to be confined to their tents, but thereafter, whenever the weather was good, every patient was removed from his tent into the open air, a sufficient degree of warmth being maintained by the use of hot-water bottles or heated bricks wrapped in newspapers. The results achieved by this method of treatment were excellent. Nearly every patient had a lower temperature at night than in the morning and felt decidedly more comfortable. The charts of these patients clearly demonstrated the great value of fresh air and sunshine for patients suffering from influenza and pneumonia. The number of cases treated was 351 and there were 35 deaths. In view of the fact that only the most serious cases were moved from the ships to the hospital, such a rate of fatality among the hospital patients may be considered small. Very few of the attendants and nurses contracted the disease. It should be added that they all wore improvised masks made from gravy strainers with five layers of gauze basted on to the wire frame, while every nurse was instructed to wash and disinfect her hands before taking food. Opportunity was afforded during this outbreak to observe the incubation period of influenza, which was generally about 48 hours. Exact information of necessity accumulates slowly, but we may hope surely.

[1] THE LANCET, 1913, i., 1291.

Annotations.

"Ne quid nimis."

THE EUROPEAN FOOD SITUATION.

A CLEAR conception of the physical results produced by the food blockade of the (late) Central Empires may be gained from the report of a special sitting of the combined medical societies of Berlin, held on Dec. 18th last, which has just come into our hands. The meeting was called by the council of the Berlin Medical Association to hear a series of statements upon the medical aspect of the food question by representative physiologists, hospital physicians, and medical men engaged in food administration. Scarcity had begun already in the middle of the year 1916, but careful press censorship kept the seriousness of the situation hidden not only from the people at large, but from the medical profession itself. Speakers at the meeting recalled with a certain grim bitterness, not untinged with admiration, how when starvation was already killing off thousands of elderly folk and maiming countless young lives the official press was congratulating the country on the advantages of diminished body-weight, the gratifying freedom from gout and eclampsia, and the high standard of intellectual life. Rubner, who, as director of the Physiological Institute in Berlin, may be considered Germany's chief authority on nutrition, set the example at the meeting of throwing off the reticence of years, and detailed the results of a general confidential inquiry into health conditions in the Federated States forced upon the Imperial Government by its expert food advisers during 1917. This inquiry, he said, showed, "to the surprise of all," how far-reaching the effects of the food blockade had already become, how rapidly the death-rate was rising, how widespread was the œdema and other disorders of nutrition, how great the emaciation and reduction of working capacity among the middle classes especially, and how alarming the increase in the death-rate from tuberculosis. From one hospital the bulletin ran briefly: "Our inmates are all dead." Among the living, he added, all spirit of enterprise, all buoyancy of thought, were lost in the general unproductive depression. The actual number of deaths due to lack of food he set down as in the neighbourhood of 800,000. Hamel, medical expert to the Ministry of the Interior, completed Rubner's picture by giving comparative figures derived from official sources. Among children from 1–5 years old the mortality in 1917 was 50 per cent. greater than the 1913 norm, in older children, from 5–15, it had risen 75 per cent. In towns of over 15,000 inhabitants deaths from tuberculosis during the first half of 1918 outnumbered the total for the year 1913. Other speakers gave harrowing details without adding to the gravity of the picture shown by the actual figures. The report, which appears in abstract in the *Muenchener medizinische Wochenschrift* of Jan. 3rd, is reproduced at length in a Berlin medical paper which has been translated by the Fight the Famine Council,[1] and is obtained on application to the honorary secretary at 4, Barton-street, London, S.W. 1. The meeting terminated with the adoption of a formal resolution calling on the German Government to do their utmost to

[1] THE LANCET, Feb. 22nd, p. 306.

allot equitably the available foodstuffs, and concluding: "We make appeal to the conscience of the men of enemy peoples in whose breast the sense of responsibility before the tribunal of history is not stifled."

THE RECENT INCIDENCE OF SMALL-POX.

SMALL-POX has recently appeared in different parts of Britain. We understand that there were a few cases in Scotland towards the close of last year, 8 cases being notified in Aberdeen, and 1, which was probably infected in Aberdeen, in Fochabers in Elginshire. Since the beginning of the year 29 cases have been notified in England. The disease occurred in January in the following sanitary districts:—Metropolitan borough of Battersea, 3 cases; metropolitan borough of St. Pancras, 4 cases; urban district of Benfieldside, in the county of Durham, 5 cases; Lower Bebington urban district, Cheshire, 3 cases; county borough of Bootle, 7 cases; Rowley Regis, Staffordshire, 1 case; Liverpool, 1 case. The following districts were affected in February:—Urban district of Wisbech, Isle of Ely, 3 cases; Hartlepool, 2 cases; rural district of Flaxton, N. Riding of Yorks, 1 case. There has thus been a wide topographical distribution of the disease, although nothing as yet like epidemic prevalence. Since a large proportion, especially of the younger section of the community, is now unprotected by vaccination, the recurrence of small-pox will demand vigilance on the part of the health authorities of this country.

SPIROCHÆTES IN TRENCH FEVER.

IT is just three years since McNee, Brunt, and Renshaw proved the infectivity of the blood in cases of trench fever. One year later, Riemer described scanty spirochætes in direct blood films from cases of Volhynian fever, which is undoubtedly the same disease. Later, in 1917, Nankivell and Sundell observed and recorded spirochætes in the urine of trench fever cases. The American Commission, under Strong, proclaimed that the virus of trench fever is filterable, and a very recent paper by Sir John Bradford and his colleagues seems to confirm this. Arkwright and Duncan demonstrated the constant presence, after a suitable time, of minute bodies (Rickettsia bodies) in the gut and excreta of lice fed upon trench fever patients. These bodies were not found in healthy lice fed upon healthy men, and their presence was correlated to the virulence of the febrile attack. In this issue Dr. A. C. Coles describes scanty spirochætes found in the blood of trench fever patients purposely infected at Hampstead. The characters of the spirochætes agree on the whole with those described by Riemer in 1917 and also, but to a lesser extent, with those of Nankivell. Perhaps the most striking common feature is the looping and intertwining to which Riemer refers very distinctly.[1] Nankivell did not remark this feature, and, on the other hand, described a tapering end to his spirochæte, whereas Dr. Coles finds that his spirochæte never tapers. The question as to whether these various findings have any common ground appears partly solved by the possibility of the Rickettsia bodies being of filterable size, and also by the very pertinent fact to which Coles alludes—namely, that Noguchi found that the spirochæte of Weil's disease will pass through a Berkefeld V filter. The investigation of the filterable virus requires a very special technique, of which McNee and his colleagues do not seem to have taken full advantage, as Edward Hort, whose pioneer work in this connexion is unique, pointed out, and it is quite possible that all these investigations may eventually be merged into a single life-history. Until such a consummation is attained we can but place on record such findings as those of Dr. Coles without, for the moment, attempting to evaluate them.

[1] See THE LANCET, 1917, i., 347.

THE RESTORATION OF SERBIAN LIBRARIES.

WHAT Serbia has suffered in destruction of human life and property during the last four years can never be accurately stated, but in one direction the loss is precisely known and very detrimental to the resumption of normal intellectual life. Serbian libraries and printing presses seem to have been a special object of enemy attentions, their efforts to destroy the monuments of Serbia's ancient civilisation and the future means of culture and education in that country being extremely thorough. The library contained in the University of Belgrade was destroyed, together with the University itself, during the bombardment of that city; the library of the monastery of Dechani was pillaged; and we may add to the list the library of Nish, the scientific library of Alexinatz, the theological library of Prizren, and those of Sloplje and Kragujevatz. Serbia's heroism has defeated the military purposes of her enemies, but she will be largely dependent upon her Allies for help in the re-establishment of her literary needs. In another column of this issue Lord Crewe makes an appeal on Serbia's behalf for books of every kind, old or new. Many people in this country will respond generously to Lord Crewe's appeal from a pure desire to help an unfortunate ally, and it may not unfairly be pointed out that their gifts will promote the study of our language and literature in a country where it has hitherto been little known. The secretary of the organisation for the restoration of Serbian Libraries, which is being promoted by the Royal Society of Literature, is Miss Waring, 2, Bloomsbury-square, London, W.C.

RADIUM TREATMENT OF EPITHELIOMA OF THE LOWER LIP.

THERE is considerable diversity of opinion as to the value of radium in the treatment of the different forms of malignant tumour. Some enthusiastic advocates of the therapeutic properties of radium contend that it is of use in almost any form of superficial malignant tumour or at any stage of the disease. The more conservative, however, hold that, while radium is of decided value in the treatment of certain cancerous growths, its scope of utility is limited, and, on the whole, its main value lies in its employment as an adjunct to surgery. Epithelioma of the lower lip is a form of cancer which, perhaps, best lends itself to treatment by radium. In the *International Journal of Surgery* for December, 1918, Dr. George Elliott, of Toronto, discusses at some length the radium treatment of epithelioma of the lower lip and the origin of such growths. That chronic irritation from pipe-smoking is a frequent or even an exciting cause he is inclined to doubt, and statistics from the Department of the Registrar-General of Ontario were quoted in support of this view. Recently in one year in the Province of Ontario the figures relating

to deaths from cancer in all situations were thus tabulated: Cancer and other malignant tumours of the buccal cavity, 94; of the stomach and liver, 631; of the peritoneum, intestines, and rectum, 263; of the female genital organs, 177; of the breast, 126; of the skin, 26; of other organs and organs not specified, 489. Of a total of 1806 classified deaths cancer of the buccal cavity and of the skin is the only form that can be connected with smoking. Dr. Elliott points out that when from this total of 120 are eliminated those in other situations than the lower lip it will be readily appreciated upon what meagre grounds cancer of the lower lip is regarded as being associated with pipe-smoking. He holds that for this form of epithelioma radium is the treatment *par excellence*. From the cosmetic standpoint alone it possesses the obvious advantages that there is little or no scarring; it causes scarcely any pain; it appeals to the patient, who is usually terrified at the idea of operation; and the result of treatment, so far as can be judged at present, seems to be permanent. Statistics obtained direct from the Deputy Registrar-General of Ontario, Colonel J. W. S. McCullough, show that there has been a marked increase in the number of deaths from cancer and other malignant tumours in nearly all situations, especially in the skin, whereas deaths from cancer and other malignant tumours of the buccal cavity have only increased by three. Dr. Elliott attributes the increase of mortality from malignant growths of the skin to the fact that treatment is postponed until the condition is so serious that nothing is of any avail. Radium to be successful must be employed early, and, for obvious reasons, the treatment must have a wider range than the clinical distribution of the lesion. Early diagnosis is essential and there is little doubt that in some superficial cases of malignant growths, and especially, perhaps, of epithelioma of the lower lip, radium treatment is indicated. Dr. Elliott, in his paper, mentions several cases of epithelioma treated successfully by radium. In his opinion the most important detail of treatment is the careful regulation of the dosage, the correctness of which must depend upon the judgment of each individual administrator. He considers that physiological chemistry may some day solve the problem of cancer, and suggests, as has been done before, that this disease may be due to an aberrant metabolic process in the chemical constituents of the cell.

SURGICAL TREATMENT IN HYPERTROPHIC STENOSIS OF THE PYLORUS.

ALTHOUGH it is now many years since hypertrophic stenosis of the pylorus was first described, opinions have ever been at variance whether the condition should be treated by medical or by surgical means. Dogmatism has been rife, but the question remains undecided. Whilst some authorities express themselves as convinced that no proved case ever gets well by medical measures alone, others do not resort to surgical treatment at all, believing that without it the mortality is less. This divergence of view is, no doubt, largely due to varying nomenclature, for the successes of treatment by medical means are regarded by the extremists of the other school as examples of faulty diagnosis, and of confusion between congenital hypertrophic stenosis of the pylorus and mere pyloric spasm. A view intermediate between these two extremes has been gaining ground in recent years and has found frequent expression in the literature. It is to the effect that actual obstruction of the pyloric orifice by the hypertrophied muscular band is comparatively rare and that spasm is the determining factor. If the hypertrophy is slight there is a good chance of success by medical treatment alone, but when it is considerable surgery offers the only chance of success. If this view be accepted it becomes a matter of great importance to decide when an operation is needed and the optimum time at which it should be performed. One of the reasons which have led the physician to hesitate before resorting to surgery has been his unwillingness to subject so small and feeble an infant, and one so lacking in resistance, to the shock inseparable from a severe operation. Speed and a minimum of exposure and manipulation are very desirable if shock, hitherto the commonest cause of surgical failure in this condition, is to be avoided or reduced. These desiderata would appear to be attained in the operation devised by Rammstedt, one frequently employed in the United States, but hitherto little known in this country. It consists in the simple division of the hypertrophic muscular band by an incision in the long axis of the pylorus transverse to the muscular fibres without interfering with the mucous membrane and without closing the gap so formed by sutures. The whole operation, including the initial incision of the abdominal wall and its subsequent closure, occupies only from five to seven minutes, and very little manipulation is required. Another advantage is that the normal condition of the alimentary canal is restored. At a recent meeting of the Medical Society of London, a report of which is included in this issue, Mr. R. A. Ramsay described in detail this operation as he had performed it on three occasions. Although few in number they illustrate the reasonableness of the procedure and serve to bring the operation to the notice of physicians and surgeons on this side of the Atlantic. Mr. Tyrrell Gray, whose experience had been greater, said that it was quite in accord with the general conclusions arrived at, and the opinion of these two finds, perhaps, its greatest support in the work of W. A. Downes, of New York, who, by substituting Rammstedt's operation for gastro-enterostomy reduced the mortality for the surgical treatment of this condition at his hands from 43 to 24 per cent.

SENSATION AND THE CEREBRAL CORTEX.

A RECENT number of *Brain* contains a further contribution by Dr. Henry Head to the subject which he has made peculiarly his own—that of sensation in its different phases at each and all of the various levels of the central nervous system.[1] He has taken the opportunity of restating and succinctly summarising the results of previous investigations on sensation as it manifests itself in lesions of the peripheral nerves and spinal cord. The war has provided numerous chances of minute examination of cortical and subcortical cases where the lesion is small and localised on the main sensory pathways or centres, and Dr. Head is thus able to provide a remarkably complete review of the whole subject, which on both theoretical and practical sides is deserving of close attention. In the lower levels of the nervous system affection of certain sensory tracts produces strictly limited

[1] THE LANCET, 1918, ii., 657.

alterations in sensation. In the cord dissociation of sensibility—touch, for instance, being appreciated, while sensibility to pain and temperature is lost—is a common occurrence, and the neurologist justifiably localises the conduction of certain forms of sensation in certain paths. In the peripheral nerves the specific characters of deep and cutaneous sensibility are demonstrable with ease where lesions disturbing the conduction of one or other take place. With the cortex, however, the position is of a quite different nature. If the sensory pathway, with all its anatomical and physiological complexities, is regarded as simply a chain, with a receiving organ at the periphery, a transmitting tract, and a discriminating organ at the cortex, the sensory conditions are not identical throughout the whole mechanism. At the periphery, as Dr. Head says, we see how a measurable physical stimulus is transformed into various physiological reactions; at the cortex we observe the ultimate condition of these impulses, in the act of subserving sensation, after they have undergone integration and selection. It should thus be manifest that in cortical lesions we have changes which can be expressed in psychical terms only. These changes are, according to the results of the researches detailed in this paper, definite loss of power to recognise spatial relationships, graduated intensity, and similarity or difference in objects in contact with the body. Otherwise expressed, the cortex, speaking always from the sensory viewpoint, is much less concerned with the direct appreciation of crude sensory stimuli of whatever order than with discrimination of the triple type just mentioned. It is in the reactions of the optic thalamus, freed from cortical control, that the non-discriminative aspects of sensation find their expression.

In this ingenious way Dr. Head endeavours to bring into line what on the sensory side corresponds to the more familiar facts of experimental physiology as evidenced on the motor side. We owe more especially to the genius of Hughlings Jackson and of Sherrington the hypothesis, and its proof, of the existence of two motor mechanisms in mammals, or, rather, of a primitive motor mechanism subsequently controlled from higher, cortical, areas, but nevertheless still existing and capable, in certain circumstances, of manifesting its independence. Removal of cortical control allows mesencephalo-spinal motor mechanisms fuller play. With the details of these phenomena we are not here concerned, but of the general statement there can be no doubt. Analogously, according to Dr. Head, removal of cortical sensory control allows lower sensory mechanisms to assert themselves, mechanisms which, apparently abolished, nevertheless exist and are capable of independent activity. This is, of course, but a very incomplete statement of the facts, though for the sake of emphasising the idea of cortical sensory control, as opposed to mere appreciation, it is well to strip, for the moment, the main conception of its accessories. At all physiological levels of the nervous system sensory integration is taking place. Stimuli of varying kinds compete simultaneously for peripheral receptors. Many impulses arising thus, by selection, in end-organs do not, as a fact, traverse completely the sensory pathways to the cortex, but are turned aside at lower levels into reflex paths and never, ordinarily, reach consciousness to become "sensations." Others, however, reach the optic thalamus and the cortex; in the case of the former, they excite conditions underlying the affective aspects of sensation; in the case of the latter, the discriminative aspects. In a word, selection, rejection, and adaptation are constantly taking place; only the sum is presented to consciousness. Dr. Head holds that on the higher physiological planes impulses precluded from exciting sensation are not necessarily wiped out; they may produce a profound and manifest effect, although they cannot excite consciousness.

THE LOWER UTERINE SEGMENT.

THE lower uterine segment has been a source of contention among anatomists and obstetricians for many years past and an immense amount of literature bearing on the subject has been published. The question is by no means settled, and from time to time papers are written by adherents of the two main theories adding further testimony in favour of their particular view. The real problem, put shortly, is, Does any part of the cervix take a share in the formation of the lower part of the body of the uterus during pregnancy or does it not? Many of the earlier authorities believed that towards the end of pregnancy the upper part of the cervix became taken up and contributed to the formation of the uterine cavity, so that the internal os was situated at a much higher level relatively than in the non-pregnant uterus. Another point which arises from this is the exact anatomical situation of the so-called ring of Bandl or the retraction ring. Does this represent the junction of the upper and lower uterine segments, or is it the upwardly displaced internal os? At the present time the great majority of anatomists and obstetricians, we believe, follow the teaching of Barbour, and hold the former view rather than the latter. At the same time the question is by no means settled, for so recently as 1907 a drawing of a new frozen section was published which appeared to lend great support to the view that the whole of the lower uterine segment is developed from the cervix. In the present number of THE LANCET we publish a paper by Professor Hastings Tweedy, in which he suggests that the thickened fibro-muscular bands in the pelvic diaphragm, which hitherto have been called the transverse ligament of the cervix, or Mackenrodt's ligament, should be termed the tendons of the uterus. He cannot conceive of this tissue as forming an imperfect diaphragm across the pelvic floor, as he maintains if this were the case it must inevitably be torn to such a degree in parturition that it could never regain its original continuity. It appears to us that the question of its ability to stretch rather than to tear would depend upon the relative amounts of muscle and fibrous tissue present, and we see no insuperable difficulty in believing that softened fibrous tissue could yield sufficiently and not tear during labour. The lower uterine segment, he holds, is formed by a growth, and not by a mere stretching of pre-existing tissue, and he adds that it is impossible to account for its presence by any other explanation. With this statement most authorities would agree, and there would seem to be no difficulty in believing that the lower part of the uterus grows, just as does the upper part, during the progress of a pregnancy. Whether the growth is due to the pressure of the fœtus or to the stimulus to growth of the pelvic tissues, which is one of the consequences of pregnancy, does not appear to be very material.

Professor Tweedy further maintains that it is wrong to regard the cervix as consisting of tissue prone to stretch, and adduces as an argument in favour of this assertion the hypertrophy of the cervix which takes place in procidentia uteri. It is easy, however, to demonstrate on any well-marked case of procidentia uteri that the accompanying elongation of the uterine cavity is due primarily to stretching, and that the permanent elongation which eventually occurs is a later phenomenon. Professor Tweedy believes that when pregnancy occurs the internal os opens and the ovum finds room for its growth in the upper region of the cervix, so that he is an upholder of the view that the lower uterine segment is really derived from the cervix. This view, of course, may turn out ultimately to be the correct one; at present the matter can only be regarded as non-proven. We do not, however, think that the arguments put forward by the author of this paper would be sufficient to cause those obstetricians to change their opinions who hold that the lower uterine segment develops with the rest of the uterine cavity in the very remarkable growth which occurs during pregnancy.

THE SUPPLY OF MEDICAL STUDENTS.

WE have received from the General Medical Council the following statement giving the number of medical students in actual attendance on courses of professional instruction in January of the present year, for each period of the curriculum:—

Topical distribution.	First year.		Second year.		Third year		Fourth year.		Final year.	
	M.	W.	M.	W.	M.	W.	M.	W.	M.	W.
England and Wales ...	1089	350	700	326	4?1	?91	354	141	428	108
Scotland	617	293	483	306	33?	210	252	156	333	108
Ireland	446	112	3?6	125	40?	92	339	64	175	10
Total	215?	755	1579	757	1186	593	945	361	936	226

M, men. W, women.

The totals for the several areas in the order given are 4238, 3093, and 2159, with a grand total of 9490, of whom 6798 are men and 2692 women. The figures should be compared with those for May of last year which appeared in THE LANCET of July 27th, 1918 (p. 113). The grand total of medical students has received a quite astonishing addition in the last six months, as will be seen from the following summary:—

Total Medical Students in Attendance.

January, 1917 ...	6682	May, 1918	7630
October, 1917 ...	7048	January, 1919 ...	9490

Evidently nothing has occurred to make the profession of medicine less attractive as a career in the eyes of parents and their adolescent children. The numbers of women entering on a medical career are still increasing, but their ratio to men students has diminished in consequence of the very large influx of the latter in the last six months.

THE BRITISH PSYCHOLOGICAL SOCIETY.

THE constitution of this society has received an important emendation in the admission of persons not actually engaged in psychological work. At a special general meeting held in London on Feb. 19th it was unanimously resolved to admit others interested in the various branches of psychology, and to institute three special sections, devoted respectively to the educational, industrial, and medical aspects. Further particulars of this interesting development may be obtained from the honorary secretary of the British Psychological Society, the Psychological Laboratory, University College, London, W.C. 1.

THE Governors of the London Hospital decided on Wednesday last to fill the vacancies on the honorary medical staff, left by the retirement of Dr. F. J. Smith and Dr. Henry Head, with whole-time paid officers, consisting in each case of director, three clinical assistants, with laboratory and clerical staff.

Dr. Addison, President of the Local Government Board, has appointed Miss Janet Mary Campbell, M.D., M.S., to be a medical officer of the Board in special charge of the work of the Board in respect of maternity and child welfare.

THE following lectures will be delivered at the Royal College of Physicians of London, Pall Mall East, on Tuesdays and Thursdays in March and April, at 5 o'clock:—Milroy Lectures: Dr. John C. McVail (March 13th, 18th, 20th), "Half a Century of Small-pox and Vaccination"; Goulstonian Lectures: Dr. W. W. C. Topley (March 25th, 27th, April 1st), "The Spread of Bacterial Infection"; Lumleian Lectures: Sir Humphry Rolleston (April 3rd, 8th, 10th), "Cerebro-spinal Fever."

A CONFERENCE on Post-war Developments relating to Public Health has been arranged by the Royal Sanitary Institute for March 13th–15th, to be held at 90, Buckingham Palace-road, London, S.W. 1. Among the subjects on the programme are: City Hygiene in Relation to Employment, to be introduced by Dr. W. J. Howarth; the Public Health Aspect of Tuberculosis, by Dr. Noel D. Bardswell; Public Health Propaganda and Social Work, by Professor H. R. Kenwood; Welfare Work in Factories, by Dr. Edgar L. Collis; and Child-Welfare Work, by Dr. Flora Shepherd.

URBAN VITAL STATISTICS.

(Week ended March 1st, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 15·0 to 35·7 in the five preceding weeks, was again 35·7 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 32·4, or 1·8 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 13·0 in Coventry, 16·3 in Grimsby, and 16·6 in Gillingham, to 56·0 in Salford, 58·1 in Tynemouth, 62·1 in Wakefield, 65·6 in St. Helens, and 66·7 in Blackburn. The principal epidemic diseases caused 200 deaths, which corresponded to an annual rate of 0·6 per 1000, and included 51 from whooping-cough, 48 from measles, 47 from infantile diarrhœa, 38 from diphtheria, 12 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 1·3 in Sheffield and in Middlesbrough, 1·5 in Warrington, and 4·0 in Rotherham; and whooping-cough of 1·7 in Wolverhampton, 1·9 in Stoke-on-Trent, 2·0 in Rhondda, and 2·3 in Great Yarmouth. The deaths attributed to influenza, which had increased from 224 to 3054 in the five preceding weeks, further rose to 3889, and included 808 in London, 196 in Liverpool and in Manchester, 159 in Birmingham, 130 in Leeds, 129 in Bradford, 98 in Salford, 94 in Newcastle-on-Tyne, and 90 in Leicester. There were 1095 cases of scarlet fever and 1172 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1088 and 1185 respectively at the end of the previous week. The causes of 81 deaths in the 96 towns were uncertified, of which 15 were registered in Birmingham, 12 in Liverpool, 7 in Manchester, and 6 in Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 17·0 to 38·4 in the six preceding weeks, further rose to 40·0 per 1000. The deaths from influenza numbered 78, while in 618 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 75 and 5?3 respectively. The 1037 deaths in Glasgow corresponded to an annual rate of 48·3 per 1000, and included 37 from whooping-cough, 9 from measles, 4 from diphtheria, 2 from scarlet fever, and 1 from infantile diarrhœa. The 268 deaths in Edinburgh were equal to a rate of 41·2 per 1000, and included 9 from whooping-cough, and 2 each from scarlet fever and diphtheria.

SOME EXPERIMENTS ON MASKS.

BY H. MASON LEETE, M.B., B.S., B.HY. DURH., M.R.C.S., L.R.C.P. LOND., D.P.H.,
SENIOR MEDICAL ASSISTANT AND BACTERIOLOGIST, CITY HOSPITAL, EDINBURGH.

THE third wave of the influenza epidemic finds us with no settled ideas as to the use of masks as one of the preventive measures in dealing with this disease. The lay press discusses whether or no they should be worn, and there is little wonder that opinion is divergent when one finds opposite views as to their efficiency given by medical authorities themselves.

At the time of writing we have in this hospital three pavilions set aside for influenza patients, and among the staff attending these patients cases, some serious ones, are constantly cropping up. Any hospital dealing with the disease must have to face a similar problem and must be anxious to protect its staff in the best manner possible, and the question of the use of masks arises. But if masks are to be worn they must be efficient ones, and the simple experiments described are attempts to test the efficacy of mask protection and to form some opinion as to their value from the bacteriological point of view.

Account of the Experiments.

Infection, whatever precise form it may be, comes from the patient in the form of droplets of moisture from his mouth and nose. In coughing and sneezing these droplets are expelled with considerable velocity for some distance from the patient, and in this manner those in close contact with him are undoubtedly infected. In order to reproduce this moisture distribution method, and to give such droplets a definite velocity, we prepare an emulsion of *Staphylococcus pyogenes aureus* and project this in the form of a fine spray from an ordinary De Villbiss Atomiser No. 16, fixed at a given distance from a Petri dish upon which the inoculum was received. In most of our experiments this distance was 9 inches, and as this particular atomiser will give a definite visible spray for a distance of 3 feet it is obvious that at 9 inches distance the particles will possess a considerable velocity.

The emulsion of staphylococcus used was standardised to contain approximately 1000 million organisms per cubic centimetre. The staphylococcus was chosen because it is easily cultivated, easily emulsified, does not die out readily, has distinctive definite colonies which show up early, and being comparatively harmless its projection in the laboratory in spray form has not the dangers which other organisms might have. Here, again, it must be pointed out that we are not dealing with influenzal infection from the standpoint of the specific organism concerned, but are merely investigating the carriage of living organisms contained in minute droplets and the powers certain materials have of arresting the progress of these infected droplets.

The material used in the first series of experiments was ordinary non-medicated surgical gauze such as is commonly used for dressings. This is a wide-meshed gauze which in the rolls in which it is sold has already been folded on itself three or four times. As this folding, however, is uneven and we require a standard thickness from which to work in all our experiments, we opened out the gauze to its full extent and the single layer of gauze so obtained is our standard—this doubled is a two-layer gauze, and so on. Reckoning on this plan the gauze as it comes in the package is a four-layer gauze though, as stated, uneven. The gauze in various layers was simply fastened across the open Petri dish and was thus but a distance of 1·5 cm. from the medium which it was protecting. The movable nozzle of the atomiser was directed towards the centre of the dish, which was held vertically, looking towards the atomiser at a distance of 9 inches. Two quick complete compressions of the bulb were then given, and the plate which had thus been "fired at" was immediately covered and incubated. Twelve hours later the number of yellow staphylococcal colonies was counted and recorded.

In some cases where two plates incubated under the same conditions showed any marked divergence in the number of colonies we tested a series of plates and took the average number of colonies as our number for that particular plate and protection, though for convenience they are here recorded as single plates. Where our two original plates showed approximately the same number of colonies that number was accepted and a series and average not made.

Results of Experiments.

Table I. shows the results in the first series, which are rather surprising, inasmuch as such a considerable number of layers fail to prevent transmission. This is undoubtedly due to the gauze being of a very open weave.

I.—*Surgical Gauze; Dry.* II.—*Muslin; Dry.*

Plate No.	Protection.	Colonies.*	Protection.	Colonies.*
1	Nil.	Confluent growth. Counting impossible.	2 layers.	4300
2	2 layers.	17,500	4 ,,	1400
3	4 ,,	4,200	6 ,,	100
4	8 ,,	2,000	8 ,,	40
5	12 ,,	700	10 ,,	Nil.

Working distance 9 inches. * Approximate number of colonies per plate.

In our second series of experiments (see Table II.) we used ordinary butter-muslin as the protecting material, the organisms, distance, and spraying method being exactly as before. The muslin was a fairly fine one, having 24 threads to the centimetre.

Our next modification consisted of using a muslin thickness of fairly permeable qualities as already ascertained, and varying the distance of the spray. For this we chose a four-layer muslin protection, and the average results are given in Table III. We then tried the effect of damping the muslin

III.—*Muslin*; Dry.* IV.—*Muslin*; Damp.* V.—*Coarse spray.*†

Plate No.	Working distance.	Colonies per plate.	Working distance.	Colonies per plate.	Protection.	Colonies per plate.
1	12 in.	88	9 in.	2000	4 layers.	350
2	18 ,,	14	12 ,,	268	6 ,,	230
3	24 ,,	7	18 ,,	127	8 ,,	50

* Four layers. † Muslin; dry. Working distance 9 inches.

by soaking the mask in water and then wringing it well out (Table IV.). Finally, we modified the spray from the fine atomiser effects used throughout. In this last series a much coarser spray was used, this result being brought about by closing the normal air-escape hole with which this particular atomiser is provided. Taking a distance of 9 inches and using various layers of dry muslin our plates (Table V.) showed that a fine spray has greater penetrative powers than a coarse one, despite the greater momentum of the heavier particles.

Conclusions.

When the conclusions deduced from this series of experiments come to be applied to the practical question of mask wearing it is obvious that certain modifying factors must be taken into account. The force of our spray working at a distance of 9 inches is undoubtedly much greater than that produced by even vigorous sneezing or coughing by a patient. Such a distance was chosen in order to get a series of positive results and to provide a large margin of safety. On the other hand the negative pressure produced by suction during inspiration by the wearer of the mask and amounting in practice to an increase of the projective force from the patient has to be borne in mind. Then our organism content of the spray is high, but here it must be urged that the question is rather one of whether organisms can pass than as to how many actually pass.

Several points are being further inquired into and other modifications devised, but basing our remarks on the experiments so far performed, it would seem that:—

1. Surgical gauze is an unsatisfactory material for making masks.

2. Butter-muslin is a more satisfactory material and has the advantage that it is easily obtained anywhere. Masks made of it should consist of at least four layers.

3. Damping the mask has the effect of considerably increasing the permeability and this fact should be borne in mind when masks have to be worn for any length of time.

4. Such a mask is not absolutely protective from droplet infection but materially reduces the risk and as such is of practical value.

5. A really protective mask would have to consist of six or eight layers of muslin or similar material and would need to be attached in an air-tight manner by means of an elastic band gripping all round the head and fitted with air-tight eye-pieces very much after the manner of the gas-mask in use in the Army. As it is not likely that such a form would ever become popular, the ordinary mask must be made as large as possible, come up to just under the eyes above and almost down on to the neck below, and be held in position fairly tightly by elastic or tapes above the ears and round the neck, thus decreasing as far as possible "round the corner" infection.

6. It is only necessary to wear such masks in the immediate vicinity of the patient.

7. Their application is suitable in any disease where the infection appears to be conveyed by air-borne droplets coming from the patient.

I have to thank my colleague, Dr. R. J. M. Horne, for suggestions and assistance in carrying out the experiments.

PROPHYLAXIS IN INFLUENZA.[1]

BY F. T. MARCHANT, M.R SAN.I.,

ASSISTANT DEMONSTRATOR, PUBLIC HEALTH DEPARTMENT, UNIVERSITY COLLEGE, LONDON.

As is well known, the foci of infection in this disease are the upper respiratory passages. It is for this reason that nasal and throat washes are recommended as a simple expedient to keep the nose, naso-pharynx, and fauces clean. Although probably efficacious if properly performed, their use involves trouble and difficulty with some adults and most children, and this tells against their employment.

During epidemic prevalence the odours which greet us everywhere indicate the faith which the people have in something which makes its presence distinctly evident. The psychological effect is unquestionably valuable as a combative measure; but it is desirable to ascertain if there really is a germicidal value in the emanations from these essential oils.

To test this the surface of the agar in several plates was smeared with coli broth, then covers were applied and the plates inverted. A drop of the oil was next placed in what is now the bottom of the plate, but which was previously the lid, so that only the volatilised material came in contact with the inoculated agar above it. The plates were then incubated for 24 hours at 37° C. The results were as follows:—

Oil of aniseed	A growth	Oil of cinnamon and cloves	No growth
,, ,, cloves		Alcoholic solution of aniseed, cloves, cinnamon, and formalin	
,, ,, eucalyptus ...			
Menthol			
Camphor			
Alcohol alone		Formalin alone... ...	
Control			

It will be seen from these results that oil of cinnamon presumably destroys, or at least inhibits, the growth of the organism. The same, of course, applies to the formalin. The germicidal power of formic aldehyde is generally recognised. Incidentally it has found a footing in the form of compressed tablets which are in great demand for throat infections; but owing to the irritation which they may produce their employment is restricted. I find that cinnamon not only masks the irritating effect of the formalin when the mixture is in suitable proportion, but that a decidedly pleasant mixture results which has a greater germicidal effect than the formic aldehyde alone. The oil and the formalin mix readily in alcohol or methylated spirit, making a very clear amber solution. Various amounts of each were added to alcohol, and I concluded that 120 drops of the oil and 60 drops of formalin to the ounce of alcohol furnished the most satisfactory results. If a few drops of this mixture be placed on a handkerchief the alcohol quickly evaporates, leaving a very pleasant odour with no appreciable irritation from the formalin. The germicidal power of this mixture was determined as follows: Five agar plates were prepared in the manner already indicated. Two drops of the mixture were placed in four of these, the fifth acting as a control. At the end of half-an-hour the lid (now lower part) of one of the four plates was replaced by a clean one, so that the organism was acted upon by the volatile oil for 30 minutes only. In a similar manner the organisms in the second and third plates were acted upon for 1 hour and 1½ hours respectively. The following results were obtained after incubation for 24 hours:—

Organism exposed for half an hour	No growth.
,, ,, one hour	,,
,, ,, one and a half hours ...	,,
Control	A growth.

Next, similar tests were performed to see if the formalin usefully enhanced the proven power of the cinnamon and, further, to ascertain what was the shortest time of effective exposure. Two solutions were used, one containing to the ounce of alcohol 120 minims of cinnamon, and the other 120 minims of cinnamon with 60 minims of formalin. The results were:—

	Cinnamon alone.	Cinnamon and formalin.
5 minutes' exposure	... A growth.	..... A growth.
10 ,, ,,	... ,,	..... No growth.
15 ,, ,,	... ,,	..... ,,

In order to imitate the conditions under which the mixture would actually be used four drops of the mixture were applied to a square inch of clean linen, which was placed in the bottom of each plate. The last described experiment was then repeated with the same results of absence of growth after 10 minutes' exposure. In order to prove that the organism was destroyed and its growth not merely inhibited sterile broth was poured on to the agar in the plate, which was then incubated at 37° C. for 24 hours. The broth remained clear, proving that no coli organism was living. Therefore, it seems safe to conclude that an alcoholic solution of oil of cinnamon and formalin of the strength indicated is capable by its emanations of destroying the coli organism after an exposure of 10 minutes, and this being so, we may infer that the influenza organisms would also be destroyed. There can be little doubt that this mixture applied liberally to handkerchiefs and so inhaled would prove a useful prophylactic measure. I would like to emphasise the fact that the emanations would permeate the whole of the respiratory tract, thereby reaching parts that an ordinary gargle, or even a throat lozenge, cannot possibly reach. Moreover, the dissolved lozenge is swallowed, and this sometimes leads to gastro-intestinal disturbances.

[1] The investigation was undertaken at the suggestion of Professor H. R. Kenwood, M.O.H., Stoke Newington.

THE POST-GRADUATE ASSOCIATION:

SCHEME FOR POST-GRADUATE MEDICAL EDUCATION APPROVED BY THE LONDON MEDICAL SCHOOLS.

A SCHEME of post-graduate medical education, advanced by representatives of post-graduate schools and special hospitals in London, has now reached the stage of a final draft. This draft is returning to the individual bodies for their approval, after which a public meeting will be held, probably some time in April, to place the whole organisation on an early working basis.

The scheme begins by a general statement of objects. A post-graduate scheme is obviously required to meet the needs of these classes: Practitioners who wish to use any opportunity, such as that afforded by a holiday, to bring their knowledge up to date or to learn the details of some specialism; Officers of the Navy, Army, Air Force, Indian, and Colonial Medical Services, often far removed from scientific centres in their daily work; Graduates from the Colonies, from such Allied countries as France and Japan, and perhaps especially from America, who have hitherto taken out post-graduate courses in Germany and Austria because no like facilities were offered in Great Britain. This sort of assistance has been asked for by the Japanese and it is believed that it will be welcomed by the French. The final draft scheme provides for the coöperation of America and France through the recently organised American Post-Graduate Union and the Committee of the Société Médicale des Hôpitaux de Paris on "Medical Education in the Hospitals for Foreigners."

Scheme for General and Special Post-Graduate Courses.

The draft scheme provides for general and special post-graduate courses in the existent London medical schools where medical education for students is provided. It is suggested that each school should provide two courses of post-graduate teaching, each of a fortnight's duration, or

one course of a month's duration, the dates varying in accordance with the convenience of the institutions and conforming to a definite rota. The ordinary instruction of the medical student will not be interfered with. The teachers at each school will suggest what courses they are prepared to institute, and will draw up a programme of details. At each school also courses in some special subject will be arranged, lasting usually for not less than three months, where research work will be invited, and where those following the course may act as clinical assistants to the physician or surgeon in charge of the particular subject. All the post-graduate students, moreover, will be afforded facilities to attend the ordinary hospital practice.

Existing London post-graduate schools and special hospitals will continue the instruction they are already giving in unison with the general scheme, but with such time limits as they may choose; while the medical schools of the United Kingdom—provincial, Scottish, and Irish—will be invited to coöperate with the London Association in providing periodical courses of instruction.

The Central Organisation.

The Council of the Post-Graduate Association will consist of representatives of all participating teaching institutions, as well as of representatives of the Board of Education, National Insurance Commission, and analogous bodies in the Overseas Dominions and the United States of America. The constitution of the Association will be framed so as to enable the holding of property and the receiving of grants from the Board of Education. The Council will appoint an executive committee and administrative committees, which bodies in their turn will be responsible for the appointment of whole-time officers and secretarial staff. The home of the Association will be a building in central London, which it is hoped will become the meeting place of the medical graduates of the Empire and Allied Nations.

Finance.

It is hoped that sufficient money will be forthcoming to provide from private donations for the erection and equipment of the building and some endowment for its annual maintenance. Every student will pay a registration fee in addition to fees for instruction. The income of the Association will thus be derived from registration fees, fees for courses, personal gifts, and Government grants. It is proposed to apply to the Board of Education for a grant to make the Association self-supporting. The participating schools would be under no financial liabilities, while any grants from the Board of Education will be paid to the Association, the constituent schools being only responsible to the Association for the instruction undertaken. The Executive Committee will decide the fees in consultation with the individual schools, and each participating school will undertake to give no organised post-graduate courses, save for examination purposes, independently of the central organisation.

MINISTRY OF HEALTH BILL:

VIEWS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

THE Society of Medical Officers of Health have had under consideration the Ministry of Health Bill introduced into the House of Commons on Nov. 7th, 1918, and have prepared the following Memorandum, to which they are inviting the attention of the local sanitary authorities. As the new Bill, introduced on Feb. 17th, is practically identical with the earlier one referred to above, the Society of Medical Officers of Health suggest that it would serve a useful purpose if the councils of the authorities communicated the result of their deliberations to the Member or Members of Parliament for the borough or division at an early date.

Ministry of Health Bill, 1918.

This Memorandum was approved on behalf of the Society of Medical Officers of Health by the Council at a meeting held at 1, Upper Montague-street, Russell-square, W.C., on Jan. 17th.

The Society of Medical Officers of Health have urged from time to time the need for the establishment of a Ministry of Health. They note with satisfaction that a Bill has been introduced to establish a Ministry of Health and a Board of Health to exercise in England and Wales, and in Scotland, respectively, powers with respect to health and local government, and for purposes connected therewith. They especially approve of Clause 2 of the Bill, which makes it the duty of the Minister of Health to take all such steps as may be desirable to secure the effective carrying out and coördination of measures conducive to the health of the people, including measures for the prevention and cure of diseases, the treatment of physical and mental defects, the collection and preparation of information and statistics relating thereto, and the training of persons in health service.

The Society of Medical Officers of Health consider that Clause 3 of the Bill dealing with the transfer of powers to and from the Ministry of Health in unsatisfactory.

In the first place this clause encumbers the Minister at the outset with matters outside the scope of national health, notably those powers and duties of Insurance Commissioners which are not strictly relative to health.

In the second place this clause does not transfer to the Minister at once certain fundamental health matters such as—(*a*) the powers and duties of the Board of Education with respect to the medical inspection and treatment of children and young persons; (*b*) the powers and duties of the Minister of Pensions with respect to the health of disabled officers and men after they have left the service; and (*c*) the powers and duties of the Secretary of State under the Lunacy Acts, 1890 to 1911, and the Mental Deficiency Act, 1913.

In the third place this clause transfers to another body, the Privy Council, work for which the Minister of Health should be responsible, namely, the duties heretofore performed by the Medical Research Committee.

Lastly, this clause omits all reference—and there is no reference in the Bill—to the transference to the Minister of certain other fundamental health matters, for example, the health functions of (1) the Home Office, including the sanitary conditions of factories, the investigation and prevention of industrial diseases, the work of certifying factory surgeons, and the care of patients under the Inebriates Acts; (2) the Board of Trade as regards the health of seamen and emigrants; (3) the Board of Agriculture and Fisheries as regards certain dairy and farm produce important as affecting national health; (4) the Privy Council as regards the General Medical Council, which controls the training and conduct of medical practitioners, and the Pharmaceutical Society with similar powers relative to chemists under the Pharmacy Acts.

The Society of Medical Officers of Health are of opinion that the consultative councils to be set up under Clause 4 of the Bill should report to the Minister through a health council which should be established under the Bill, so that the survey of national health may be balanced, comprehensive, and continuous, and the coördination of the work of the Ministry real and complete.

Generally the Society of Medical Officers of Health are of opinion that any Bill for the establishment of a Ministry of Health should be founded on the following basic principles: that health is a matter of national concern rather than of sectional or vested interests; that the functions of the Ministry to be created must be to protect, maintain, and improve the health of the nation as a whole and of every unit of the nation in particular, regardless of age, sex, occupation, the disease contracted, poverty, or insurance; that to attain this end and secure and complete the central organisation the Ministry of Health must from the outset assume control of all the health functions of existing central departments; that a Ministry of Health will be in a large measure ineffective unless there are established suitable areas for local health administration with one local health authority in each area responsible for all health matters.

In the opinion of the Society of Medical Officers of Health a Bill not based on these principles, or based only on some of these principles, is doomed in administration to failure, complete or partial. The Memorandum is signed on behalf of the Society of Medical Officers of Health, by order of the Council, by Professor Henry R. Kenwood, President, and Dr. Joseph Priestley and Mr. T. W. Naylor Barlow, the honorary secretaries of the Society.

ST. ANDREW'S HOSPITAL, DOLLIS HILL.—This institution, which has just issued its sixth annual report, was opened in 1913 at Dollis Hill for the reception of patients who, while not suitable subjects for free treatment in charitable institutions, are unable to meet the charges necessary to secure adequate medical or surgical treatment in private nursing homes. During the war it has been used for the treatment of soldiers and sailors, but when the beds are surrendered by the military authorities the hospital will resume the work for which it was founded. The report for 1918 shows a deficit of about £40 on the year's working, while the building debt amounts to £5524. Additional expenses will be incurred in restoring the wards to their pre-war use, and an appeal is being made for contributions to wipe out the debt and to provide a permanent endowment for the hospital.

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

The Influenza Mortality in South Africa.

IN the Union House of Assembly at Cape Town on Jan. 23rd the Minister for the Interior, Sir Thomas Watt, stated that the deaths in the Union of South Africa from influenza and its complications from August 1st to Nov. 30th, 1918, were approximately Europeans, 11,726; other than Europeans, 127,745. The returns showed:—Cape: Europeans, 5855; others, 81,253. Transvaal: Europeans, 3267; others, 25,397. Orange Free State: Europeans, 2242; others, 7495. Natal: Europeans, 362; others, 13,690. The Government and local authorities had expended £308,000 in combating the epidemic; a few minor recrudescences of the disease still exist in South Africa. Roughly one-fourth of the population are Europeans, yet the mortality is over 10 natives to 1 European.

An interesting piece of news comes from Saul's Poort, 50 miles from Rustenburg in the Transvaal, where there is a native village of 1000 people. When the headman heard about the influenza he issued orders that no one was to leave the place and that no outsider was to be admitted. Everyone was dipped in a carbolic dip and took a dose of medicine. Not a single case of illness occurred, although the disease caused 16 deaths in two little native villages near by. These villages were infected by a native wedding party from Rustenburg. These were guarded night and day to prevent any access to the segregated clean village.

I may mention here that a somewhat heavy influenza toll has been exacted in the British East African Protectorate; Europeans, Asiatics, and natives all suffering, the last named the most severely. As in South Africa and other countries, several medical men have died in the cause of duty. These medical men who have succumbed to the disease include Dr. B. W. Cherrett, medical officer of health for Nairobi, the capital; Dr. Barrett; Dr. I. M. O'Connell, medical officer, Kenia Province, Fort Hall; and Dr. W. H. Heard, of the Uasin Gishu plateau, a Dutch district. Dr. Heard's death occurred at sea while en route for home, his wife also succumbing to the disease. Dr. Heard had served through the Boer War, and held the Queen's medal with two clasps. Mrs. Walker, another victim to influenza, was the wife of the Government veterinary pathologist.

Cape Medical Council.

The recent election of four members of the Cape Colonial Medical Council resulted as follows: Dr. W. Darley Hartley, 172 votes; Dr. J. Wood, 162; Dr. A. Jasper Anderson, 161; Dr. A. Marius Wilson, 128; Dr. M. L. Hewat, 94. Another candidate, Dr. L. A. W. Beck, is now deceased. The first four gentlemen were elected, and will remain in office for three years or until the coming into operation of the new Union Medical Act. Sir John Hewat, M.B., C.M. Edin., of Woodstock, Cape Town, has received many congratulations on his appointment as Knight Bachelor.

The Late Major H. W. Sykes, R.A.M.C.

Major Harold Widdrington Sykes, R.A.M.C., died at Beira, Portuguese East Africa, on Nov. 11th, aged 34, from influenza. Major Sykes was the only son of the Rev. W. Sykes, vicar of Meldon, Northumberland. He went out to South Africa to take up a medical appointment at Grey's Hospital, Pietermaritzburg. He subsequently practised at Greytown, Natal, and on the Rand. Answering the call for military medical service, Major Sykes served as an Army doctor in the Gallipoli Expedition, in Egypt, and in East Africa.

Jan. 30th.

THE MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of the supporters of this institution, which seeks to care for poor persons convalescent or recovered from institutions for the insane, will be held on Wednesday next, March 12th, at 3 P.M., at the Skinners' Hall, Dowgate-hill, London, E.C. The chair will be taken by Mr. Stanley Keith, and among the speakers will be Dr. Norman Moore, Mr. A. Hill Trevor (member of the Board of Control), the Hon. John Mansfield (Lord Chancellor's Visitor in Lunacy), and Sir Rowland Blades, M.P.

Obituary.

HOWARD GRAEME GIBSON, M.R.C.S. ENG.,

MAJOR, R.A.M.C.

An Appreciation by Colonel S. L. CUMMINS, C.M.G., A.M.S., *Adviser in Pathology, B.E.F.*

MANY both in the Army and outside it will have heard with deep regret of the sad death from influenza, while on active service in France, of Major Howard Graeme Gibson, R.A.M.C. As his commanding officer at the time of his death and as a close personal friend, I feel constrained to record, even briefly, an appreciation of one whose ability and energy had already made valuable contributions to medical knowledge and who seemed certain to be destined to a brilliant career in the Corps.

Born in 1883, Gibson received his medical education at Guy's Hospital and entered the Royal Army Medical Corps on Jan. 28th, 1907, being promoted Captain on July 20th, 1910.

My first personal contact with him was when, early in the spring of 1914, he formed one of the "Specialist Class" in bacteriology at the promotion course at the Royal Army Medical College. Gibson entered into the work of

MAJOR HOWARD GRAEME GIBSON.

the laboratory with enthusiasm. It was a pleasure to have in the class a man with such keenness and avidity for work. From the very beginning he stood out as the possessor of exceptional ability, and the favourable opinion which I had formed of him was justified, when, at the end of the course, he made the highest marks in the "Specialist Examination," and by his success in other subjects as well as bacteriology succeeded in qualifying for a year's acceleration of promotion. A few months later the outbreak of war swept Gibson, like so many others, away from scientific work to take an active part in the great world drama. He joined the 12th Royal Lancers and with them proceeded at once to the front. The duties of a regimental medical officer with cavalry during the first phases of a war are such as to put the highest strain on initiative, endurance, and courage. This test Gibson met with his usual cheery energy and zeal. Throughout the retreat, throughout the advance, during the battles of the Marne and of the Aisne, and later, when the British Expeditionary Force was rapidly and secretly moved north to defend the Channel ports, he shared with the regiment its trials, hardships, dangers, and glories. Then, just when open warfare was changing to the war of trenches, and when the cavalry was helping, dismounted, to eke out our numerically

weak infantry, Gibson was severely injured by a shell-burst and was sent home, wounded, to England, where many months of hospital treatment were necessary before he could resume military duty. This injury and disability, so galling at the time to one whose whole soul was with the Army, proved a blessing in disguise, for it led to his resumption of the bacteriological work for which he was so well qualified.

Being quite unfit to resume active duty at the front, Gibson was now posted to the Vaccine Department of the Royal Army Medical College. Here, working under Lieutenant-Colonel D. Harvey, he had full scope for the application of his special knowledge. Although the claims of the Vaccine Department made necessary long hours of routine work, still, encouraged and aided by Harvey, he found time to devote himself to research on protection against bacillary dysentery. The result was a brilliant piece of work communicated to the *Journal of the Royal Army Medical Corps* of June, 1917, and which culminated in the production of Gibson's antidysenteric sero-vaccine. The severe reactions following the inoculation of unaltered dysentery bacilli had, for the most part, prevented the use of antidysenteric vaccines. Gibson, recognising the danger that the sensitisation of bacilli by the homologous antiserum might, while eliminating the severe reaction, eliminate also the value of the emulsion as antigen, conceived the ingenious idea of removing from the serum, by adsorption, all its "antibacterial" "immune bodies" while retaining the anti-endotoxic substances. Such a serum injected simultaneously with the appropriate dose of killed dysentery baciHi might be expected to prevent any severe local reaction, while still leaving the bacteria uninjured and capable of evoking in the body the production of agglutinins, opsonins, and other immune substances. Experiments on animals proved this conception to be correct, and the new principle was soon applied in practice, large supplies of the sero-vaccine being manufactured and sent abroad for use. While it is still too early to put forward final claims for the value of this sero-vaccine, all the reports received have so far been favourable, and there is every reason to hope that many lives will be saved by this means in the future.

In November, 1917, Gibson, now greatly improved in health, was passed "fit" for service in France, and joined Sir William Leishman as assistant adviser in pathology at headquarters. Here he threw himself with his usual ardour into statistical work connected with the effects of the T.A.B. inoculation and the use of antitetanic serum. His neat and thorough records are before me as I write, and will constitute a valuable source of reference in the future.

When in April, 1918, I succeeded Sir William Leishman as adviser in pathology my task was rendered easy by the fact that Gibson, who remained on as my assistant, had at his fingers' ends every fact connected with the office records and every detail of the work in hand. Then came the autumn epidemic of influenza, with its high death-rate and its many unsolved problems. Research was a matter of supreme necessity, and the number of men qualified to execute such work, and at the same time actually available for employment, was very small. I had decided that a research team was needed at once. It seemed waste to keep such a man as Gibson occupied with office records when knowledge, enthusiasm, and technical skill were so badly wanted. He welcomed my suggestion with the greatest delight, and I was able to include him as the senior officer of the team. His colleagues were Major F. B. Bowman, C A.M.C., and Captain J. J. Connor, A A.M.C., with whom was associated for clinical work Major C. E. Rundell, R.A.M.C. Helped generously by the provision of experimental animals through the Medical Research Committee, these officers were successful in transmitting the disease to monkeys and other animals by the inoculation of filtrates of infected material, thus confirming the work of C Nicolle and Lebailly. They went further, and, employing the "Noguchi" method, were successful in obtaining cultures of a very minute filter-passing coccus which reproduces on inoculation into animals the symptoms of the disease. This work, carried out independently, has been completely confirmed by the publication by Sir J. Rose Bradford of similar observations made by Captain J. A. Wilson, R.A.M.C. At the very moment of success, when the work of months had at last reached its final stage, Major Gibson, who had been putting in long hours with his cultures in the laboratory, himself developed the disease in its severest form. Those who best knew him will appreciate what the Army and the Corps have lost through his untimely death. He was a man who seemed destined to a career of distinguished success and utility. Lives such as his add fresh laurels to the splendid traditions of the Royal Army Medical Corps.

Additional Note by Major-General Sir WILLIAM LEISHMAN, K.C.M.G., C.B., F.R.S., K.H.P.

To the above appreciation of the late Major H. G. Gibson by Colonel Cummins, to every word of which I subscribe, I should like to add a few lines. Sudden death and the cutting short of what promised to be a brilliant career has, alas, been all too frequent during recent years, but the poignancy of sorrow and regret, for relatives and friends, remains as sharp as ever at each fresh loss. Of the many friends and comrades whose lives have been given for their country during the war there are none whom I shall miss more acutely than Major Gibson. It was indeed an irony of fate that he should have met his death at the very moment when his devoted investigations into the ætiology of the disease which killed him appeared likely to be crowned with a success which would have brought him well-deserved distinction.

No man had ever a better or more loyal colleague to work with, and in the months in which we were associated in France I not only formed the highest opinion of his work and judgment but also of his upright and sterling character. No one could have lived long in close association with him without realising the rare qualities of his nature and conceiving for him a deep and genuine affection. In illustration of this I may, perhaps, quote a sentence from a letter received from one of the colleagues associated with him in his last work. "He was one of the finest characters I have ever met, and never in the six months that I knew him did I hear him say anything against anyone."

One would like to think that it may perhaps be some small consolation to his widow and family to know that his brother officers will not readily forget their lost friend, and that a large number of them realise very clearly the great loss which the Corps has suffered in the early passing of a man whose work had already stamped him as destined to rise high in the line to which he had devoted himself so whole-heartedly.

War Office, Feb. 27th, 1919.

JOSEPH BALDWIN NIAS, M.D. OXON., M.R.C.P. LOND.,
LATE RADCLIFFE TRAVELLING FELLOW AT OXFORD.

Dr. J. B. Nias, who died at a nursing home on Feb. 20th at the age of 61, was a practitioner in whom erudition and scholarship were blended with the love of the practice of medicine. He was born at Bath on Dec. 13th, 1857, and was the son of Admiral Sir Joseph Nias. After five years spent at Winchester, he entered Exeter College, Oxford, in 1875, where a year later he was elected to an open scholarship in science. In 1879 he was in the first class in the final school of natural science, and subsequently entered at St. Bartholomew's Hospital, where he was afterwards house physician to Sir William Church. In 1882 he was elected Burdett-Coutts scholar and Radcliffe Travelling Fellow, and in addition to the study which this appointment entailed, set himself the task of becoming acquainted with the life of his benefactor and embodying this knowledge in a book, "Dr. John Radcliffe: a Sketch of His Life, with an Account of His Fellows and Foundations,"[1] which was published last year and reviewed in these columns at the time. In 1883 he proceeded to the B.M. degree at Oxford, and obtained the Membership of the Royal College of Physicians of London, graduating M.D ten years later with the thesis on Mastication in Young Children. For many years Dr. Nias practised in South Kensington, and among the scholarly literary work which was so congenial to his bent of mind was the compilation of a report on the Greek Manuscripts contained in the Library of the Medical Society of London. This was published in 1905. His clinical writings covered such a wide field as the opsonic index in phlyctenular conjunctivitis and the successful treatment of streptococcal infection in the dog. All were characterised by qualities of detachment and freedom from bias as welcome as unusual. If only for this scientific detachment, Dr. Nias's place will be hard to fill.

[1] THE LANCET, Dec. 7th, 1918, p. 781.

Correspondence.

"Audi alteram partem."

THE MEDICAL PROFESSION AND THE TRADE-UNION QUESTION.

To the Editor of THE LANCET.

SIR,—It cannot be too widely known, as indicated in your leading article of March 1st, that the meeting held in Wigmore Hall on Feb. 23rd could not by any stretch of imagination be regarded as representative of the great mass of medical practitioners. The profession would be gravely misled if the decision there recorded went forth to the world without some explanation as to the conditions under which that vote was obtained.

The meeting was called by the Medico-Political Union—a body for some years committed to trades-unionism, and four-fifths of the audience were already whole-hearted supporters of that policy. In the article above referred to you deal with the arguments put forward by the principal speakers, and mention the fact that they were largely unanswered. This absence of criticism did not mean acquiesence and was mainly due to the fact that while the proposer and seconder of the resolution expended one hour in recommending their invitation to the whole profession to come under the trade-union umbrella, opponents, on the other hand, were only allowed five minutes to argue their side of the question and were then only accorded an impatient hearing with many interruptions, mostly irrelevant. Any real discussion was therefore impossible. It is clear, however, from the three mass meetings recently held in London, that the medical profession is at present politically in a ferment and has shown itself to be divided into two main lines of thought. One section still regards the practice of medicine as a vocation and not as a trade, and, in a materialistic age, aspires to the twin virtues of service and sacrifice; the other, represented by the Medico-Political Union, argues all questions of medical politics from the standpoint of profit and loss, and takes up a firm trade-union position on a basis of hard cash. To the practical medical politician, anxious that his profession should pull its weight in the national boat, it seems not impossible to correlate these divergent views and so find some common ground from which to watch the interests of the profession and to promote the public weal.

Would it not, then, be possible that from these two main bodies of medical opinion two councils be formed, each organised on its own lines to suit the special needs of its constituents, and when grave matters of medical politics are discussed they might meet in joint session and so bring to bear on the responsible authorities the full weight of their accumulated knowledge and experience. The Medical Parliamentary Committee has already among its members distinguished representatives of the trade-union doctrine, and I venture to suggest that this committee might well be made a rallying ground for all shades of medical opinion and form the nucleus of a general medical Parliament.

It is clear that medical men in contract practice must be treated by Government departments and Insurance Commissioners differently from what they have been in the past, their opinion must be sought, when medical questions are under discussion, and their views not only heard but attention must be paid to them. It is incontrovertible that panel practitioners have been treated infamously on occasion. Dr. E. H. M. Stancomb and Dr. J. A. Angus proved this conclusively at Wigmore Hall. Furthermore, members of the profession who are practising as free men, unshackled by Government contracts, must be enabled to make their weight felt in the councils of the nation and wherever their expert knowledge and experience may be of value.

In the future, and indeed *in the present*, no Minister of Health can afford to flout medical opinion, as have Government Departments in the past, and this must be made clear in unmistakable terms. Fortunately, we have in the first head of the new Ministry a medical man who is alive to the value he is likely to gain by ready coöperation with his professional confrères. But the trade-union section must not imitate their less educated brethren by exhibiting the canker of unreasoning suspicion, but should take a broad and statesmanlike survey of the situation and unite with the Medical Parliamentary Committee to form a really active and properly representative body for the greatest good of the greatest number.—I am, Sir, yours faithfully,

R. FIELDING-OULD, M.D., M.R.C.P., M.A.

William-street, S.W., March 4th, 1919.

CONTACT INFECTION OF CHICKEN-POX.

To the Editor of THE LANCET.

SIR,—In an article published in THE LANCET of Feb. 12th, 1916, on the aerial conveyance of infection of certain fevers I added a note on the contact infection of chicken-pox. For reasons stated the work on the aerial conveyance of infection was stopped, but that on the contact infection of chicken-pox continued, though necessarily slowly, until the hospital was utilised as an American war hospital.

In the note on chicken-pox contact infection 7 cases were reported as having passed through the ward without causing infection, the last case having been placed in the ward on the eighth day of the eruption. Since that time 5 more cases have passed through, and as the last marks a definite infecting period there seems to me some reason for recording them.

The ward chosen for the work was a scarlet fever one of 20 beds for small children, and no precautions were taken to avoid infection from the chicken-pox cases introduced. The ages of the unprotected children exposed to these five cases were: 1 year, 7; 2 years, 6; 3 years, 9; 4 years, 13; 5 years, 10; 6 years, 6; and 7 years, 2. The five patients introduced suffered from both chicken-pox and scarlet fever, one being introduced on the eighth day of the chicken-pox eruption, one on the seventh day, one on the sixth day, and two on the fifth day. Only one case was introduced at a time, and was kept in the ward until all the scabs had separated or longer, while no patient was discharged from the ward until more than 22 days had elapsed after the first exposure, many being kept much longer.

No infection arose from the first four cases (Cases 8, 9, 10, and 11), but the fifth (Case 12) infected three children.

8th Case.—Eighth day of chicken-pox eruption; very numerous scabs and numerous pustules. 19 other patients in ward—11 protected, 8 unprotected. No infection.

9th Case.—Seventh day; numerous scabs and pustules. 19 other patients in ward—6 protected, 12 unprotected, 1 doubtful. No infection.

10th Case.—Sixth day; numerous scabs and vesicles; a few pustules. 19 other patients in ward—8 protected, 10 unprotected, 1 doubtful. No infection.

11th Case.—Fifth day; moderate eruption, scabs and a few pustules. 19 other patients in ward—8 protected, 11 unprotected. No infection.

12th Case.—Fifth day; very abundant eruption, scabs and some pustules. 19 other patient in wards—7 protected, 12 unprotected. Infected three children in ward. Of the three infected children, one showed the eruption 14 days after the introduction of the infector to the ward, and the other two 16 days after. The infection was apparently by indirect contact, for the infector and the three infected were in bed for the first few days of exposure; the infector for the first five days, two of the infected for the first four days, and the other for the first three days. Further, the infected were all in beds at some distance from the infector.

Altogether 12 cases have passed through this ward, and though the number may seem small to some, it is to be remembered that chicken-pox is a very infectious disease, which seldom fails to cause infection in wards occupied by small children. There is, therefore, some reason to think that the contact infection of chicken-pox probably ceases about the end of the first week of the eruption or the beginning of the second. Further, that chicken-pox may certainly be infectious by contact on or before the fifth day.

I am, Sir, yours faithfully,

FREDERIC THOMSON.

North-Eastern Hospital, Tottenham, London, N.,
Feb. 27th, 1919.

"SHOCK" (SO-CALLED).

To the Editor of THE LANCET.

SIR,—A philosopher has written that "words shoot back upon the understanding of the wisest, and mightily entangle and pervert the judgement," and it would be hard to find even in theological and metaphysical controversy an instance of greater confusion than has arisen from the misuse of the word "shock." According to the dictionaries it denotes

"a sudden and more or less violent physical or mental impression: a startling agitation of the feelings." By some of the older writers, including, I think, Sir William Savory, it was reserved to denote the *event* which tended to produce a *condition* called collapse. More recently, shock has been defined as "the reaction of the central nervous system to abnormal or exaggerated afferent impulses"—i.e., to an *event* or series of events, which may or may not produce as an end-result a *condition* clinically serious. This is, no doubt, strictly correct, but the word is so generally applied to the condition of the organism when its "protective" reaction has failed, or has itself proved noxious, that it seems hardly practicable thus to alter the nomenclature.

Such being the case, I venture to suggest that at least by "surgical shock" should be understood only that condition which is a direct and immediate effect of some abnormal impulses from the periphery (as from a wound or in the course of operation), and is essentially a disturbance of the nervous system (Professor Bayliss's "primary shock"), with instant disturbance of the vital functions it controls. As an illustration I may mention that the most sudden and profound shock I have seen occurred in a healthy woman undergoing a minor operation on severance of a nerve which was in a state like that of bulbous nerve-ends in stumps. However (one may suppose because the clinical signs are similar), a variety of conditions are also called, or rather miscalled, "shock." Such are those due more or less indirectly to the "primary shock," but in addition often to other causes, chill, hæmorrhage, want of nourishment, &c., and now regarded as being essentially changes in the quality and distribution of blood ("secondary shock"), ("acapnia"); and even, strange to say, to the effects of an overdose of morphine or chloroform, which so far from causing true shock tend to prevent it! These conditions should be termed "collapse," or at any rate, not "shock"; and it would certainly save much perplexity if every writer and speaker about to make use of the word "shock" would first try to define what he means by it.

I am, Sir, yours faithfully,

Fairhazel Gardens, N.W., March 3rd, 1919. J. D. MORTIMER.

HYPOTHERMIA IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—I have always looked upon the hypothermia which follows influenza as quite the most important and dangerous symptom. Indeed, I have thought it to be almost pathognomonic, and was quite unprepared to learn from Dr. Samuel West's letter in THE LANCET of Feb. 1st that it is not widely recognised. I have never even heard it disputed, and had taken for granted that it was familiar to practically every member of the profession. The high temperature, I have found, will usually go down of itself, but the low temperature which follows is far more dangerous and difficult to deal with, and renders the patient specially liable to complications. This fact is, of course, a strong argument against the use of any depressing remedies in the early stage. I believe that the treatment by antipyrin, which was at one time very prevalent, has been responsible for a great many fatal cases. I am, Sir, yours faithfully,

Oakley-street, S.W., Feb. 7th, 1919. J. FOSTER PALMER.

BOOKS FOR SERBIA.

To the Editor of THE LANCET.

SIR,—May we appeal through your columns for books for Serbia? The Austro-Hungarians and the Bulgarians were at special pains to remove all means of education and culture in Serbia, and they destroyed her libraries after taking from them all that they themselves wanted. They also destroyed every printing press in the country. It is impossible to state in a phrase all that such losses must mean to a nation. But those of us who have imagination will hardly refuse a gift from our well-filled bookshelves. Books, old or new, of practically every kind, and in any language, are needed, and should be sent to Miss Waring, Hon. Organising Secretary for the Reconstruction of Serbian Libraries, Royal Society of Literature, 2, Bloomsbury-square, London, W.C.1. The name and address of sender should be given on the outside of the parcel.

Those who wish to help and who cannot give books are asked to send donations towards expenses, and for the providing of books that may be missing from among the gifts. Cheques should be crossed "Messrs. Coutts & Co., A/C War Fund of the Entente Committee."

I am, Sir, yours faithfully,

CREWE,
Hon. Director of Foreign Affairs of the Royal Society of Literature.

Feb. 27th, 1919.

BUYING PRACTICES.

To the Editor of THE LANCET.

SIR,—May I through your columns give a word of caution to the large number of practitioners now returning to civil life respecting the present value of practices. The position is quite different now from pre-war conditions, and before any practice is purchased very careful investigation is essential in order to arrive at its value. Many practices to my knowledge have been sold to unwary purchasers on the basis of last year's income, which is, in many cases, inflated by munition workers or epidemic fees, to the extent of 50 per cent. above the normal value. To be rushed into a purchase such as this spells disaster. Far better, before making any decision, to seek the advice of any of the old-established agents, who have a reputation to maintain and who can be relied on to advise after investigation as to the proper value of any practice. I am, Sir, yours faithfully,

125, Strand, W.C., Feb. 25th, 1919. PERCIVAL TURNER.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Capt. A. M. Pryce, R.A.M.C., was a student at Middlesex Hospital and qualified in 1903. He held appointments at the Leeds Sanatorium for Consumption and at the Leeds City Fever Hospital, afterwards becoming assistant M.O.H. for Leicester. At the time of joining the R.A.M.C. he was demonstrator of bacteriology at the University of Leeds. He died at Calais of bronchopneumonia.

Capt. F. B. Chenoy, I.M.S., was a student at the London Hospital and qualified in 1913. Shortly afterwards he joined the I.M.S.

Surg. Sub-Lieut. F. W. Lemarchand, R.N.V.R.

Surg.-Lieut. R. A. Hobbs, R.N., was a student at St. Mary's Hospital, London, and qualified in 1908. He held an appointment at the Royal Surrey County Hospital, Guildford, and, prior to joining the Royal Navy, was in practice at High Wycombe, Bucks, where he was honorary medical officer to the Memorial Cottage Hospital.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported:—

Warrant Telegraphist T. A. Payne, R.N.R., died of pneumonia, son of Dr. A. A. Payne, of Sheffield.

THE HONOURS LIST.

The following awards to medical officers (all members of the R.A.M.C. except where otherwise stated), in recognition of their gallantry and devotion to duty in the field, are announced. The acts of gallantry for which the decorations have been awarded will be given later:—

Bar to Distinguished Service Order.

Capt. (acting Lt.-Col.) J. H. Fletcher, D.S.O., M.C.; Maj. (temp. Lt.-Col.) F. C. Sampson, D.S.O.

Distinguished Service Order.

Capt. P. A. Ardagh, M.C., N.Z.M.C.; Temp. Maj. C. F. Knight; Maj. L. May, M.C., Aust. A.M.C.; Lt.-Col. S. Paulin, Can. A.M.C.

Second Bar to Military Cross.

Temp. Capt. G. O. F. Alley, M.C.; Lt. (temp. Capt.) W. J. Knight, M.C.; Temp. Capt. (acting Maj.) M. A. Power, M.C.

Bar to Military Cross.

Capt. (acting Maj.) J. B. Cavenagh, M.C.; Temp. Capt. F. O. Clarke, M.C.; Temp. Capt. C. N. Coad, M.C.; Capt. (acting Maj.) C. F. Corkill, M.C.; Temp. Capt. (acting Maj.) J. E. Davies, M.C.; Capt. F. F. Dunham, M.C., Can. A.M.C.; Capt. (acting Maj.) F. Gamm, M.C.; Capt. (acting Maj.) W. C. Hartgill, M.C.; Capt. (temp. Maj.) R. A. Hepple, M.C.; Temp. Capt. (acting Maj.) B. Knowles, M.C.; Temp. Capt. A. C. W. Knox, M.C.; Temp. Capt. (acting Maj.) H. D. Lane, M.C.; Capt. J. S.

Mackay, M.C., Aust. A.M.C.; Temp. Capt. J. D. MacKinnon, M.C.; Capt. (acting Maj.) W. A. Miller, D.S.O., M.C.; Capt. L. C. Palmer, M.C., Can. A.M.C.; Capt. J. G. Shaw, M.C., Can. A.M.C.; Capt. (acting Maj.) J. C. Spence, M.C.; Capt. D. G. K. Turnbull, M.C., Can. A.M.C.

The Military Cross.

Temp. Capt. (acting Maj.) J. R. P. Allin; Capt. A. F. Argue, Can. A.M.C.; Temp. Capt. (acting Maj.) B. W. Armstrong; Capt. F. G. Banting, Can. A.M.C.; Capt. J. H. Blair, Can. A.M.C.; Capt. E. J. Bradley; Capt. M. G. Brown, Can. A.M.C.; Capt. E. T. Cato, Aust. A.M.C.; Capt. H. T. Chatfield; Temp. Capt. T. Clapperton; Capt. (acting Maj.) H. R. Dive; Temp. Capt. R. Donald; Capt. L. H. Fraser, Can. A.M.C.; Temp. Capt. W. B. Gourlay; Temp. Capt. N. F. Graham; Capt. G. W. Grant, Can. A.M.C.; Temp. Capt. R. P. Hadden; Capt. J. M. Henderson, Aust. A.M.C.; Temp. Capt. A. Hunter; Temp. Capt. W. B. Jack; Temp. Capt. M. J. Johnston; Capt. C. T. Lewis, Can. A.M.C.; Temp. Capt. C. W. B. Littlejohn; Capt. I. H. Lloyd-Williams; Temp. Capt. A. Mason; Capt. H. C. Moses, Can. A.M.C.; Capt. J. A. Nicholson; Capt. K. C. Purnell, Aust. A.M.C.; Capt. A. M. Purves, Aust. A.M.C.; Temp. Capt. E. Rogerson; Temp. Capt. J. Scott; Temp. Capt. T. McC. Sellar; Capt. (acting Maj.) A. L. Shearwood; Capt. C. H. K. Smith; Capt. G. A. Smith, Can. A.M.C.; Capt. J. Stirling; Capt. J. T. Stirling, Can. A.M.C.; Capt. R. C. Weldon, Can. A.M.C.; Temp. Capt. G. B. Wilkinson.

The following awards to and promotions of medical officers, all members of the R.A.M.C. except where otherwise stated, in connexion with operations in Mesopotamia, are announced:—

C.B.—Lt.-Col. and Bt. Col. M. H. G. Fell, C.M.G.

C.B.E.—Lt.-Col. (temp. Col.) J. H. R. Bond, D.S.O.; Col. S. F. St. D. Green, A.M.S.; Lt.-Col. W. B. Lane, C.I.E., I.M.S.

O.B.E.—Maj. J. H. Brunskill, D.S.O.; Temp. Capt. W. A. Cardwell; Maj. (acting Lt.-Col.) G. E. Cathcart; Capt. R. A. Chambers, I.M.S.; Temp. Capt. L. W. Davies; Temp. Capt. G. H. Davy; Capt. J. R. Harris; Maj. H. L. Howell, M.C.; Capt. C. J. H. Little; Temp. Capt. G. S. Marshall; Capt. J. P. Mitchell; Capt. J. J. H. Nelson, M.C., I.M.S.; Capt. C. J. Penny; Capt. H. G. Robertson; Temp. Maj. M. B. Scott; Capt. F. T. H. Wood.

To be Major General.—Col. (temp. Maj.-Gen.) A. P. Blenkinsop, C.B., C.M.G., A.M.S.

To be Brevet Colonel.—Maj. and Bt. Lt.-Col. C. M. Goodbody, C.I.E., D.S.O., I.M.S.

To be Brevet Lieutenant-Colonel.—Maj. T. G. F. Paterson, D.S.O., I.M.S.; Maj. E. A. Roberts, D.S.O., I.M.S.

To be Brevet Major.—Capt. A. G. J. MacIlwaine, C.I.E.; Temp. Capt. H. H. Raw; Capt. A. Shepherd.

Military Cross.—Temp. Capt. J. A. G. Burton; Capt. C. R. Knowles; Capt. S. W. Rintoul.

BROUGHT TO NOTICE.

The names of the following medical officers in the Royal Air Force have been brought to the notice of the Secretary of State in respect of the valuable services they have rendered in connexion with the war:—

Capt. O. H. Gotch; Capt. R. Johnson; Surg. Gen. Sir W. H. Norman, K.C.B.; Capt. C. R. M. Pattison; Capt. H. E. Whittingham.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeon-Lieutenant: J. M. Bickerton.

ARMY MEDICAL SERVICE.

Temp. Col. Sir Almroth E. Wright, K.B.E., C.B., relinquishes his commission and retains the rank of Colonel.

Temp. Col. Sir A. E. Garrod, K.C.M.G., (Lieut.-Col., R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

TERRITORIAL FORCE.

The undermentioned Lieutenant-Colonels, from the R.A.M.C. (T.F.), to be Colonels: A. E. L. Wear, C. Averill, H. D. Brook, R. Pickard (acting Col.), A. B. Soltau, F. Kelly (acting Col.), L. J. Blandford (acting Col.), J. Clay (acting Col.), P. C. Burgess, H. H. C. Dent, G. H. Edington, J. M. Rogers-Tillstone.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. J. E. Brogden is placed temporarily on the Half Pay List on account of ill-health contracted on active service.

Lieut.-Col. W. L. Steele, C.M.G., to be acting Colonel whilst employed as Assistant Director of Medical Services of a Division.

Temp. Maj. C. V. Mackay and Majors F. J. Garland, G. G. Tabuteau, and J. M. B. Rahilly relinquish the acting rank of Lieutenant-Colonel on re-posting.

To be acting Lieutenant-Colonels whilst specially employed: Maj. A. C. Osburn, Temp. Capt. E. R. Hunt.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Temp. Maj. H. M. Chasseaud, Majors L. V. Thurston, A. C. H. Gray, Capt. (acting Major) G. F. Allison, Capt. B. A. Odlum.

Capt. and Bt. Major J. Gilmour retires receiving a gratuity.

Relinquishing the acting rank of Major on re-posting: Capts. J. P. Litt, C. J. O'Reilly; Temp. Capts. H. B. Atlee, R. S. Frew, J. A. Jones, P. M. Heath, D. M. Ross, H. D. Ledward, J. L. Gordon, W. Anderson, C. A. H. Gee, E. L. M. Hackett, B. H. Barton, S. J. Rowntree, H. W. Gabe, J. R. Craig, W. H. W. Attlee, A. M. Caverhill.

Temp. Maj. G. P. Mills (Capt. R.A.M.C., T.F.) relinquishes his temporary commission.

To be acting Majors: Capts. W. D. Anderton, W. W. MacNaught, A. L. Aymer; Temp. Capts. A. Mathieson, D. Cowin, W. M. Oakden, T. Winning, A. T. W. Forrester, N. E. Kendall, A. C. Renton, A. Feiling, A. Farquhar, A. Grant, W. E. R. Dimond, A. Scott, S. E. Pickin, F. O. Clarke, A. V. Craig, J. Morrison, B. Pickering, H. R. Davies, J. G. Moseley; while specially employed: J. F. Venables, A. H. Thomas, S. A. W. Munro.

Capt. E. L. Puddicombe relinquishes the acting rank of Major on re-posting.

Temporary Lieutenants to be temporary Captains: M. P. Thomas, G. R. Bickerstaff, W. P. Philip, C. I. Ilderton, J. W. Robertson, C. M. Bradley, C. Fletcher, E. J. Blewitt, H. E. Kitchen, H. G. G. Nelson, H. C. Attwood, J. D. McKelvie, A. M. Clare, F. L. Rigby, W. Rigby, B. G. Brooke, H. K. Waller.

Officers relinquishing their commissions: Temp. Majors E. D. Hancock (on ceasing to be employed with Guildford War Hospital, and retains the rank of Major), G. H. W. Humphreys and G. F. B. Simpson (retain the rank of Majors); Temp. Capts. J. L. Menzies, J. Lamont (and are granted the rank of Major); Temp. Capts. retaining the rank of Captain: A. N. E. Rodgers, A. B. Northcote, H. Peters, T. B. Jobson, A. Drouin, T. S. G. Martin, E. L. MacKenzie, H. Boyers, T. D. Miller, J. V. Brown, H. Crassweller, A. W. Allan, J. B. O'Reilly, R. N. Berman; Temp. Capt. R. S. Topham (on transfer to the R.A.F.), E. E. T. Nuthall (late temporary Captain, is granted the rank of Captain); Temp. Hon. Capt. H. F. Bold-Williams (and retains the honorary rank of Captain); Temp. Lieut. J. M. Flavelle (and retains the rank of Lieutenant); Temp. Hon. Lieut. J. O'B. Hodnett (and retains the honorary rank of Lieutenant).

SPECIAL RESERVE OF OFFICERS.

Captains relinquishing their commissions and retaining the rank of Captain: A. C. Court, N. L. Joynt.

TERRITORIAL FORCE.

Officers relinquishing the acting rank of Lieutenant-Colonel on ceasing to be specially employed: Capt. H. F. Wilkin, Majors A. Callam, E. Turton and A. A. Martin.

Officers to be acting Lieutenant-Colonels whilst specially employed: Majors J. Scott and W. A. Thompson, Capt. (acting Major) D. G. Rice-Oxley.

Capt. (acting Major) H. J. Dunbar to be acting Lieutenant-Colonel whilst specially employed.

Captains to be acting Majors whilst specially employed: J. A. Willett, C. D. Law, H. Henry, H. P. Ashe, J. G. Hill, F. S. Bedale, A. M. Gibson, G. E. J. A. Robinson, J. G. Morgan.

Capts. (acting Majors) A. M. Johnson, M.C., A. G. T. Hanks, J. W. Dale, M.C., and W. H. Milligan, and Capt. (acting Lieut.-Col.) G. H. Spencer relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) C. D. S. Agassiz is granted the pay and allowances of his acting rank.

Capts. E. H. Bingley and T. R. Bowen relinquish their commissions and retain the rank of Captain.

1st London Sanitary Company: Lieut. S. C. Rigg to be Captain.

2nd London Sanitary Company: Capt. (acting Major) J. Chalmers relinquishes his acting rank on vacating the appointment of Deputy Assistant Director of Medical Services; Lieut. D. M. Neil to be Captain.

2nd London General Hospital: Capt. A. S. Daly is seconded for service with a Military Hospital.

4th Northern General Hospital: Capt. G. J. R. Lowe to be acting Major whilst specially employed.

2nd Eastern Hospital: Majors T. H. Ionides and W. Broadbent are restored to the establishment.

1st Western General Hospital: Capt. (Bt. Major) R. E. Kelly is restored to the establishment.

1st Northern General Hospital: Capt. N. Hodgson to be acting Major whilst specially employed and to remain seconded.

5th Southern General Hospital: Capt. C. H. Saunders to be acting Major whilst specially employed.

3rd London General Hospital: Capt. S. M. Smith is restored to the establishment.

2nd Western General Hospital: Capt. G. Wright to be acting Major whilst specially employed and to remain seconded. Capt. (acting Major) G. Wright relinquishes his acting rank on ceasing to be specially employed.

2nd Scottish General Hospital: Lieut.-Col. Sir J. Fayrer, Bt., is retired on completion of tenure of command and retains his rank with permission to wear the prescribed uniform.

TERRITORIAL FORCE RESERVE.

Major A. Callam, from 2nd East Lancs. Field Ambulance, to be Major.

Capt. A. M. Johnson, from 3rd East Lancs. Field Ambulance, to be Captain.

Capt. J. W. Dale, from 3rd Welsh Field Ambulance, to be Captain.

INDIAN MEDICAL SERVICE.

Major-Gen. G. G. Giffard has been appointed an honorary surgeon to the King, vice Surg.-Gen. T. Grainger.

Temporary Lieutenants to be temporary Captains: P. V. R. Murty, D. C. McNair, P. M. Masina.

Lieut. R. A. Murphy relinquishes his temporary rank.

ROYAL AIR FORCE.

Medical Branch.—W. F. Jones (temp. Surg.-Lieut., R.N.) is granted a temporary commission as Captain.

R. S. Topham (temp. Capt., R.A.M.C.) is granted a temporary commission as Captain.

Capt. R. D. Goldie (Capt. R.A.M.C., S.R.) relinquishes his commission on ceasing to be employed.

PROMOTION IN THE R.A.M.C. (TERRITORIAL).

Sir F. Blake having asked the Secretary for War whether he would state the number of lieutenant-colonels and majors, Royal Army Medical Corps (Territorial Force), who had been promoted since the promotion or seniority list was compiled last year, Captain Guest replied: Twelve lieutenant-colonels, R.A.M.C. (T.F.), have been selected for promotion under the rules governing authorised increases in the establishment. (See under Army Medical Service, Territorial Force, above.) It is anticipated that the publication of the names of majors selected for promotion to the rank of lieutenant-colonel will take place within the next three weeks.

Medical News.

THE FELLOWSHIP OF MEDICINE.—The Fellowship of Medicine has arranged with the majority of the medical schools in London and other hospitals for an emergency post-graduate course of three months for qualified medical officers from the R.N., R.A.M.C., and R.A.F., from the Dominions and the United States and Allies, admitting to their general practice, including clinical instruction in the wards and out-patient departments, clinical lectures and demonstrations, post-mortem demonstrations, laboratory work, &c. The London medical schools and hospitals available for emergency post-graduate study, and the special courses already in progress, are given in the following list:—

Medical schools.—St. Bartholomew's Hospital and College, West Smithfield E.C.1; St. George's Hospital, Hyde Park Corner, S.W.1; Guy's Hospital, St. Thomas's-street, London Bridge S.E.1; King's College Hospital Medical School, Denmark Hill, S.E.3; London Hospital, Mile End, E.1; London (Royal Free Hospital) School of Medicine for Women, 8, Hunter-street, Brunswick-square, W.C.1; Middlesex Hospital, Berners-street, W.1; St. Thomas's Hospital, Albert Embankment Westminster Bridge, S.E.1; University College Hospital Medical School Gower-street, W.C.1; Westminster Hospital, opposite Westminster Abbey S.W.1.

Special hospitals.—Cancer Hospital, Fulham-road, S.W.3; *Chelsea Hospital for Women, Arthur-street, Chelsea, S.W.; Hospital for Children, Great Ormond-street, W.C.1; National Hospital for Diseases of the Heart, Westmoreland-street, W.1; *National Hospital for the Paralysed and Epileptic Queen-square, W.C.1; Queen's Hospital for Children, Hackney-road, Bethnal Green, E.2; Prince of Wales General Hospital (N.E. London Post-Graduate), Tottenham, N.15; St. Mark's Hospital for Diseases of the Rectum, City-road, E.C.1; St. Peter's Hospital, Henrietta-street, Covent Garden, W.C.2; *West London Hospital (West London Post-Graduate College), Hammersmith-road, W.6.

* Members wishing to attend these hospitals must ask for special tickets.

Special courses already in progress.—King's College Hospital Medical School, Jan. 24th–March 29th; National Hospital for the Paralysed and Epileptic, Feb. 13th–April 10th; London (Royal Free Hospital) School of Medicine for Women special 14 days' course, March 15th–31st: "Medicine and Surgery of Liver and Gall-Bladder," May 5th–16th: "Diseases of the Thyroid and Parathyroids"; West London Post-Graduate College, Feb. 17th–April 17th. At the North-East London Post-Graduate College, National Hospital for Diseases of the Heart, and Cancer Hospital, special lectures will be arranged.

Time tables and syllabuses of the various courses and daily programmes will be posted in the entrance hall at 1, Wimpole-street, and can be seen at any time. Arrangements are being made for a definite course of daily lectures and demonstrations in general and special subjects at the same address. As soon as sufficient applications are received a detailed programme will be published and sent to applicants. The honorary secretaries of the Fellowship are Mr. Philip Franklin, Mr. J. Y. W. MacAlister, and Mr. Herbert J. Paterson. Tickets for the whole course, or for one or two months, at the rate of £3 10*s.* for each month, can now be obtained from Miss Willis, secretary to the Fellowship, who is in attendance daily from 10 A.M. to 5 P.M., and to whom all inquiries can be addressed at 1, Wimpole-street, London, W.1. The card of membership for any period of the course admits the holder to any, or all, of the hospitals available, including their special courses.

ROYAL INSTITUTION.—Captain G. P. Thomson will deliver his postponed lecture on "The Dynamics of Flying" on March 10th, at 3 o'clock.—Professor A. Keith will deliver a lecture on March 14th, at 5.30 P.M., on the Organ of Hearing from a New Point of View.

RÖNTGEN SOCIETY.—Professor W. M. Bayliss will deliver the second "Silvanus Thompson Memorial Lecture" in May next. Members requiring invitations for friends are requested to make application to the Honorary Treasurer, 33, Newton-street, London, W.C.2.—A joint meeting of the Röntgen Society and the Faraday Society is being arranged for the purpose of a joint discussion on "Radiometallography" (the radiography of metals by X rays).

BRITISH SCIENTIFIC PRODUCTS EXHIBITION, 1919.—The King has consented to act as President of the British Scientific Products Exhibition, 1919, which will be held at the Central Hall, Westminster, during the month of July. The President of the exhibition is the Marquess of Crewe, K.G., and Professor R. A. Gregory is chairman of the organising committee. The British Science Guild has been encouraged to organise this exhibition by the success which attended that held at King's College last summer and the more recent exhibition at Manchester. Now that many inventions can be shown which could not be put before the public during the war, there is every prospect that this year's exhibition will be even more successful than its predecessors. The objects of the exhibition will be to illustrate recent progress in British science and invention and to help the establishment and development of new British industries. Such an exhibition will enable new appliances and devices to be displayed before a large public, and will provide progressive manufacturers with an opportunity of examining inventions likely to be of service to them, thus serving as a kind of clearing house for inventors and manufacturers, as well as illustrating developments in science and industry. The exhibition will include sections dealing with chemistry, metallurgy, physics, agriculture and foods, mechanical and electrical engineering, education, paper, illustration and typography, medicine and surgery, fuels, aircraft and textiles. Firms desirous of exhibiting are invited to communicate with the organising secretary, Mr. F. S. Spiers, 82, Victoria-street, London, S.W.1.

THE FACULTY OF INSURANCE: ANNUAL PUBLIC CONFERENCE.—This conference is to be held in the Central Hall, Westminster, on Friday, April 4th, morning and afternoon. Sir L. Worthington Evans, M.P. (Pensions Minister), will speak on "The Training and Treatment of Disabled Service Men" and Captain J. O'Grady, M.P., will open the discussion. Sir Walter Fletcher (secretary to the Medical Research Committee) will speak on "Medical Research and the State" and Major-General Sir William Leishman will open the discussion on this subject. Mr. J. H. Thomas, M.P., will speak on "The Urgent Necessity for an Increase in National Health Insurance Benefits" and Mr. John Hodge, M.P., will open the discussion. The chair will be successively occupied by Mr. P. Rockliff, President; Sir Kingsley Wood, M.P., chairman; and Mr. W. S. Bennett, vice-chairman of the Faculty. A dinner in connexion with the conference will be held the same evening.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Henry Alfred Jones, of Eastbourne, the testator left £500 to the London Hospital, and £250 each to Guy's Hospital, Dr. Barnardo's Homes, St. John's Hospital for Skin Diseases, St. Peter's Hospital for Stone, Covent-garden, Westminster Hospital, the Royal Hospital for Incurables, Putney, the City of London Hospital for Diseases of the Chest, the Brompton Hospital for Consumption, Sir William Treloar's Crippled Children's Home at Alton, the Queen's Hospital for Children, Hackney-road, the Cancer Hospital, Fulham, the Royal National Orthopædic Hospital, the Royal London Ophthalmic Hospital, the London Lock Hospital, the Surgical Aid Society, the National Hospital for Paralysed and Epileptic, and the Princess Alice Memorial Hospital, Eastbourne.

BRIGHTON AND WOUNDED SOLDIERS.—Brighton was one of the first towns to have established in it a hospital for wounded soldiers, and since September, 1914, when the 2nd Eastern General Hospital was opened, the institutions for the care of the sick were of rapid growth. The smaller hospitals, however, are now gradually being closed down, cases that arrive now—like a convoy of 251 from Salonika that reached Brighton on the last day of February—being received at the larger institutions. Taking the four and a half years of war right through, so it was announced at the annual meeting of the Brighton Ambulance Division of the St. John Ambulance Brigade, no fewer than 32,000 wounded soldiers were brought to Brighton, and it is to the credit of all concerned that not a single mishap occurred in detraining them and removing them to hospital. 85 convoys were dealt with in 1918, these comprising 8945 cot cases and 4850 sitting cases.

THE MINISTRY OF HEALTH BILL AND IRELAND.—It is a source of sincere satisfaction, an Irish correspondent writes, that the President of the Local Government Board (Dr. Addison), who flatly refused last session to allow Ireland to come under the advantages of the new health measure, and who even early this session announced that the Bill would not extend to Ireland, has, by the weight of facts as to the backward public health conditions of that country, been compelled to give way. The North of Ireland Members substantiated in the House of Commons all the facts that have appeared in your columns; and what has specially impressed M.P.'s is the wretched permissive way in which any public health reforms have been applied to Ireland. The whole value of the notification of tuberculosis was rendered abortive through a clause by which a member of a family—no matter how far advanced the disease—could claim that his doctor should not notify him provided he slept alone in a room. It is difficult to say yet whether the English Bill will be modified so as to make it applicable to Ireland, or whether—as in the case of Scotland—a separate measure will be passed. In the meantime schemes are being prepared by the Irish Local Government Board and by the Insurance Commissioners, which are markedly antagonistic bodies. Three things are needed: (1) the medical profession will insist on being consulted; (2) strong advisory committees will need to be formed; and (3) an English or a Scotch medical officer of health should be appointed to take charge of the scheme in Ireland, where we have really no one conversant with the practical details of modern public health as it exists in either of those countries.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Ministry of Health Bill.

THE proceedings in Committee on the Ministry of Health Bill will commence on Tuesday next. It comes before one of the Standing Committees of the House of Commons.

Medical Treatment of Children in Ireland.

Mr. MACPHERSON, Chief Secretary for Ireland, on March 5th introduced in the House of Commons a Bill designed to make provision for the medical treatment of children attending elementary schools in Ireland and for other matters incidental thereto. It was read a first time. The title of the Bill is Public Health (Medical Treatment of Children) (Ireland) Bill.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 26TH.

Industrial Fatigue Research Board.

Captain LOSEBY asked the Minister of Labour why women were not represented on the recently appointed Industrial Fatigue Research Board.—Mr. FISHER (President of the Board of Education) replied: It was recognised when the board was first established jointly by the Medical Research Committee and the Department of Scientific and Industrial Research that its original membership would need to be extended. Additional members have, in fact, been appointed on two occasions. Women investigators have been appointed and employed from the beginning, and the inclusion of women on the board was intended from the first. Particular appointments are at present under consideration by the Medical Research Committee and the Advisory Council for Scientific and Industrial Research. It is probable that an announcement will shortly be made.

Grants to Panel Practitioners.

Mr. KENYON asked the Secretary to the Local Government Board whether it was proposed to make any special grants in respect of the medical officers of institutions approved under the National Insurance Acts on the lines of the grants to medical practitioners whose incomes did not exceed £500 per annum of 12½ per cent., and between £500 and £1000 per annum of 10 per cent., or of the additional grant to medical practitioners who undertook the supply of medicines to the persons on their lists which represented about 5½*d.* per insured person on such lists, where the certified expenditure of such institutions had not been received from the respective Insurance Committees in whose area or areas such institutions were approved; if so, whether such a grant was intended to be paid to institutions in respect of the extra cost of medicines supplied to insured persons on the lists of institutions; and, if not, why institutions were specifically excluded therefrom in view of the fact that they undertook the supply of medicines to all the persons on their lists.—Major ASTOR answered: From the terms of the question the honourable Member would appear to be under a misapprehension as to the basis and purpose of the war allowances to which I understand him to refer. These were granted in response to application made to the Chancellor of the Exchequer by the Insurance Acts Committee of the British Medical Association in respect only of practitioners working under contract with the Insurance Committees in England, Scotland, and Wales, and the selection of the particular practitioners who were to receive the allowances depended in no way whatever upon any considerations of a rise in the price of drugs, but upon two factors only—namely, the amount of the individual practitioner's income and the rural or semi-rural nature of the area in which his practice lay as affecting the amount of travelling involved. Doctors in the employ of institutions approved under Section 15 (4), to which the honourable Member's question alone refers, were not included in that application to the Chancellor of the Exchequer, and were not therefore covered in the grant given in response thereto. In reply to the concluding paragraph, it will be seen from the foregoing that the honourable gentleman is incorrect in speaking of this latter class of doctors having been excluded by the Department from the war allowances referred to, and also in suggesting that the supply of medicines by the said institutions affords any ground for their inclusion. In reply to the second paragraph of the question, I can only say that the arrangements for the work and payments of such doctors are so different from those of the doctors under contract with the Insurance Committees that I am unable to say whether or not any of such practitioners could possibly be regarded as eligible for those allowances without first considering in consultation with the Treasury the precise circumstances of any particular doctor by or in respect to whom the application might be made.

THURSDAY, FEB. 27TH.

Women and Methylated Spirits.

Major NALL asked the Home Secretary whether his attention had been drawn to the increased drinking of methylated spirits amongst women; and what steps he proposed to take to discourage or prevent this regrettable practice.—Mr. SHORTT replied: I am aware that cases of methylated spirit drinking have recently been attracting public attention. It is unfortunately not a new evil. The question whether further preventive measures are practicable has received most careful consideration, but it is to be doubted whether any means can be found of protecting against themselves those addicted to the habit.

Patent Medicines.

Sir H. NORMAN asked the Parliamentary Secretary to the Local Government Board whether his attention had been called to the increase of advertisements of patent and proprietary medicines of the classes described as contrary to the public interest by the Report of the Select Committee on Patent Medicines, 1914; whether a Bill to give effect to the recommendations of that committee had been drafted; and whether it was the intention of the Government to introduce such a Bill.—Major ASTOR answered: My attention has been called to the advertisements referred to as contrary to the public interest in the Report of the Select Committee of 1914. By the Venereal Disease Act, 1917, effect was given to the recommendation in paragraph 573 of the report of that committee, and it was enacted that medicines and medicaments for the prevention or cure of venereal diseases should be prohibited. My right honourable friend has the whole question under consideration.

Influenza.

Replying to Sir H. NORMAN, Major ASTOR (Parliamentary Secretary to the Local Government Board) said: Researches into various points relating to the nature and cause of influenza and the measures which are of practical value in preventing its spread are being actively undertaken by my own Department, by investigation of the Medical Research Committee, and by many other observers in different countries. The present position of these researches was referred to in the Memorandum on Prevention of Influenza issued by the Local Government Board last week. The electrolytic disinfectant referred to as produced in large quantities by the authorities of the borough of Poplar is supplied by the public health department of the Poplar borough council for use, after suitable dilution, as a gargle or for irrigation of the nose. A weak solution of chlorine, such as is made by this disinfectant, or the weak solution of permanganate of potash recommended in the Board's circular or other similar antiseptics, are of value in the prevention of influenza when used as a gargle or for nasal irrigation. Local authorities are authorised to provide such solution within their districts with the Board's sanction, which was signified in the circular letter to local authorities of Nov. 4th, 1918.

Influenza Patients in the Army.

Viscount WOLMER asked the Secretary for War whether he was aware that soldiers who reported sick with influenza were obliged to parade at 7 A.M. outside the medical officer's hut and, having been diagnosed as suffering from influenza with a high temperature, had to return to their quarters, pack up their kit, return it to store, parade again, and march to hospital; and whether, in view of the high death-rate among influenza cases in the Army he would consider the advisability of altering this procedure.—Captain GUEST (for Mr. CHURCHILL) answered: I am not aware that such a procedure is followed, but telegraphic instructions have been issued to all military commands in case the practice does exist in any unit.

Discharged Tuberculous Soldiers.

Replying to Lord H. CAVENDISH BENTINCK, who asked whether work centres and village settlements for tuberculous ex-soldiers would be extended, Major ASTOR stated that the Insurance Commissioners and the Local Government Board had been and were most anxious to encourage under suitable conditions and on approved standards of efficient working such centres or colonies as were referred to.

London County Mental Hospitals.

Sir CYRIL COBB asked the Secretary for War whether he could indicate at what date the three London county mental hospitals at Epsom, which the London County Council had voluntarily placed at the disposal of the War Department for use as war hospitals—viz., the Horton Hospital, the Manor Hospital, and the Ewell Colony—would be returned to the Council for renewed use for the accommodation of civilian mental cases for which they were seriously needed; whether he would take steps to secure that these hospitals were demobilised and restored to the Council at the earliest possible moment; and whether he could indicate at what date the Maudsley Hospital buildings at Denmark Hill, which were taken over from the London County Council

by the War Department at the commencement of the war and were now being used as a neurological clearing hospital, would be returned to the Council for use for the purpose for which the buildings were designed.—Captain GUEST (for Mr. CHURCHILL) answered: The Manor Hospital will be closed from March 15th next. Every effort is being made to close the other hospitals as early as possible, but it has to be remembered that the sick are still being returned from France at the rate of 1000 a day, and a very large number required special treatment. As regards the Maudsley Hospital buildings, this hospital is a neurological centre and a busy one, and, so far, it has been impossible to reduce its activity. Efforts are, however, being made to find another hospital into which the whole centre can be moved, and it is hoped that it will be possible to do this and to close the Maudsley Hospital at an early date.

Medical Women and the War Office.

Mr. RAPER asked the Secretary for War whether, in view of the Government's undertaking to remove all existing inequalities in the present law as between men and women, he would give his sympathetic consideration to support the claim of women doctors serving under or attached to the War Office for recognition of the rank and privileges to which they were entitled.—Mr. CHURCHILL replied: The general policy of the Government in seeking to remove the existing inequalities between men and women cannot be held to commit them to immediate action in this sense in every sphere, and I am not prepared to introduce legislation during the present session on the point raised by my honourable friend.

Promotions in the R.A.M.C.

Sir P. MAGNUS asked the Secretary for War whether he would give the number of members of the Royal Army Medical Corps who, having the rank of major, had been promoted to that of lieutenant-colonel; and whether, as regards such promotions, due consideration had been given to the character of the duties performed by members of the Royal Army Medical Corps who had given their services to the sick and wounded of His Majesty's Forces in our home hospitals.—Captain GUEST (on behalf of Mr. CHURCHILL) answered: If, as I presume is the case, my honourable friend is referring to officers of the regular Royal Army Medical Corps, the present number of substantive lieutenant-colonels is 237, and promotion to the rank is made by selection based on the records of the whole service of the officers. If the question refers to acting promotion among Regular, Special Reserve, Territorial Force, and temporary officers, such promotion is governed by the establishments of the various units in which officers are serving, and the appointments are made by the local authorities concerned from the officers considered most suitable for the duties required.

Medical Officers in Army of Occupation.

Colonel BURN asked the Secretary for War whether medical officers who after general demobilisation volunteered to serve with the Army of Occupation would be allowed to bring their wives to the towns in which they were serving.—Captain GUEST (for Mr. CHURCHILL) replied: This point is being considered. I will let my honourable and gallant friend know the decision arrived at.

R.A.M.C. Officers and Government Employment.

General CROFT asked the Parliamentary Secretary to the Local Government Board what steps were being taken to secure that doctors who had served in the Royal Army Medical Corps should have first claim for medical employment in Government offices or in part-time work; and whether he would give an assurance that such members of the medical service who had made considerable professional sacrifices would have due consideration for any such appointments.—Major ASTOR answered: A list is kept at the Board's offices of medical officers who have served in the R.A.M.C., Naval, or Royal Air Force Medical Services and who wish to apply for medical employment on the Board, and due consideration will be given to such officers when medical appointments are being made.

General CROFT asked the Parliamentary Secretary to the Ministry of Labour whether the officers' employment bureau was placed in touch with the various Government departments with a view to finding employment for medical officers who had served in the war.—Mr. WARDLE answered: It is presumed that the honourable and gallant Member refers to the Appointments Department of the Ministry of Labour. The Ministry of National Service is responsible for the demobilisation of qualified medical men in His Majesty's Forces. Medical men are registered and informed of openings for Government or private appointments.

Rabies in Cornwall and Devon.

In the course of a debate on supplementary estimates for the Board of Agriculture and Fisheries, Sir A. GRIFFITH BOSCAWEN (the Parliamentary Secretary to the Department) said that there had been 119 cases of rabies—95 in Devonshire and 24 in Cornwall. It had been necessary to impose very severe restrictions. He could give no date when the restrictions would be taken off. They had got to wait until the disease was stamped out. He believed that the general rule was that restrictions could not be taken off in any case until at least six months after the last reported case. There was a case reported only a few days ago.

MONDAY, MARCH 3RD.

Spirits for Medicinal Uses.

Replying to Sir J. HARMOOD-BANNER, who asked regarding the releases of spirits from bond to meet cases where these were ordered by medical men, Mr. MCCURDY (Parliamentary Secretary to the Ministry of Food) said: The increase in the percentage of spirits permitted to be withdrawn from bond for home consumption—namely, 50 per cent. of the quantity withdrawn in 1916 to 75 per cent. of that quantity—operates as from Feb. 24th. The additional quantity permitted to be withdrawn for the unexpired one-tenth of the excise year—namely, from Feb. 24th to March 31st is one-tenth of the additional 25 per cent. The Cabinet and the Food Controller have at present no reason to suppose that these additional releases will not prove reasonably sufficient for the needs of the public.

Medical Inspectors of Home Office.

Sir P. MAGNUS asked the Home Secretary how many members of his staff were engaged in the medical inspection or treatment of persons employed in factories or workshops, or otherwise engaged in matters relating to such doctors.—Mr. SHORTT replied: I understand the honourable baronet to refer only to the medical side of the Factory Department. The present established staff, which numbers about 200, includes three medical inspectors who supervise the work of the factory certifying surgeons. There are also three temporary women inspectors with special hospital training.

Medical Women and War Office Employment.

Major TUDOR-REES asked the Chancellor of the Exchequer whether the women doctors serving at the military hospital, Endell-street, London, drew their pay and allowances under the Royal Warrant, were paid from Army funds by the command paymaster, were appointed by the War Office, and were under the command of the Deputy Director of Medical Services, London District; whether, for purposes of pay, they were graded according to the ranks of the Royal Army Medical Corps; if so, whether they came within the terms of Schedule E of the Income-tax Return as persons who had served during the year as members of any of the naval or military forces of the Crown, and as such liable only to the service rate of income-tax; whether up to now they had not been allowed the relief, although the Income-tax Commissioners determined that they were entitled to it; and whether he would give instructions for the granting of the relief as from the year 1914.—Mr. BALDWIN (Secretary to the Treasury) (on behalf of Mr. A. CHAMBERLAIN) answered: The ladies employed upon medical duties as described in the question are civilian medical practitioners and are not serving as members of any of the naval or military forces of the Crown. As regards the latter part of the question the honorary Member is under a misapprehension An appeal was lodged on behalf of these doctors to the District Commissioners of Taxes, whose decision was that they were not entitled to the service rate of income-tax.

Dental Surgeons and the Army Gratuity.

Replying to Mr. PERKINS, Mr. CHURCHILL (Secretary for War) said that the gratuity provided under Pay Warrant, 1914, paragraph 497, was not payable to dental surgeons. Dental surgeons had been engaged under a special contract which did not carry a right to the Pay Warrant gratuity, but as a special concession a gratuity of £50 for each year, or part of a year, had recently been approved for these officers.

TUESDAY, MARCH 4TH.

Glen Lomond Sanatorium.

Replying to Colonel Sir A. SPROT, Mr. CHURCHILL (Secretary for War) stated that orders had been given for the evacuation at once by the War Department of the Glen Lomond Sanatorium, Fife, the number of patients there being now sufficiently reduced to admit of it being handed back for the treatment of tuberculosis.

Medical Inspection in Factories.

Replying to Sir P. MAGNUS, Mr. SHORTT (Home Secretary) stated that he would consider the advisability of transferring the medical inspection or treatment of persons employed in factories or workshops to the charge of the new Ministry of Health.

Broncho-Pneumonia in the Army.

Replying to Lieutenant-Colonel W. GUINNESS, Mr. CHURCHILL (Secretary for War) said the number of admissions to hospital from broncho-pneumonia among the British Expeditionary Force in France during the week ended Feb. 8th was 238 and the number of deaths was 84.

Strict instructions were issued in October last as to the isolation of broncho-pneumonia cases, and he was informed as a result of special inquiry that these instructions had been strictly complied with. He would be glad to investigate any specific instances of casualty clearing stations or general hospitals where these cases were not properly isolated.

Medical Men in Military Service.

In answer to Mr. LYLE, Mr. CHURCHILL said that there were 11,193 medical men and 23,931 nurses employed in the Army on Nov. 11th last, and 9593 medical man and 20,141 nurses were at present serving. The proportion of doctors in November was 1 to 318 all ranks, and was now 1 to 314 all ranks. The proportion of nurses in November was 1 to 148 all ranks, and was now 1 to 149 all ranks. He would point out that the demobilisation of medical men and nurses bore little relationship to the demobilisation of the Army as a whole; it was dependent at the bases and at home on the discharge of the hospital population, and in the field on reduction in units and formations. A very large number of civil doctors and nurses who were employed in the Voluntary Aid Detachment hospitals which had been closed and who had been released were not included in the figures he had given.

Releasing Panel Practitioners.

Sir KINGSLEY WOOD asked the Parliamentary Secretary to the Local Government Board representing the National Health Insurance Commissioners whether he would state the number of medical men on the panel lists on the date of the signing of the armistice and the number of medical men who had been demobilised since that date, and what steps he was taking to secure a more efficient medical service for insured persons by obtaining an early demobilisation of medical men.—Major ASTOR replied: The number of practitioners working for the Insurance Committees in England on Oct. 1st, 1918, was 8084, besides a certain number holding commissions in the R.A.M.C. who were free to do some part-time work for their Committee. Since Nov. 11th the number of insurance practitioners on panels in England who have been notified to the Commissioners by the War Office up to Feb. 21st as definitely released from service was 647. In reply to the last paragraph of the question, I must remind the honourable Member that the responsibility for arranging with the Military, Naval, and Air Force authorities for the demobilisation of doctors needed for the civil population rests with the Ministry of National Service. My department makes periodical representation to that department for expediting the rate of release of doctors for civil needs, and for securing the release of particular doctors required for specially urgent necessities in individual areas. The Commissioners are in constant communication with the various Insurance Committees as to the needs of their areas in this respect. I am sending the honourable Member copies of circulars addressed to these Committees which will explain the procedure adopted since the armistice.

Insurance Practice.

Sir KINGSLEY WOOD asked the Secretary of the Local Government Board whether he was aware that there had been a serious diminution in the total number of panel doctors taking place continuously since the beginning of the war; whether he could state the number of such decrease as on the first day of January last; and what action he proposed to take in the matter.—Major ASTOR answered: Yes, sir; it must be remembered that besides the large numbers of insurance medical men serving with the forces, the normal diminution of medical men by age retirements from practice and by deaths during the five years have not (as in peace time) been made good by new entrants, because newly qualified doctors have been taken into the military forces throughout the period. It is believed that the number of medical men actually carrying on insurance practice in England on Oct. 1st last was some 3800 less than at the end of the year 1914. My department has in the last few days had further conference on the subject with the Ministry of National Service, and that department is in communication with the War Office who have stated that the Secretary of State is taking steps to expedite the release of doctors from the Army.

Bonus to Panel Practitioners.

Sir KINGSLEY WOOD asked the Secretary to the Local Government Board whether, with reference to the £250,000 bonus the Insurance Commissioners had agreed to pay to doctors on the panel lists, statutory authority had yet been obtained for such payment; and whether it was contemplated that such payment would be made for the present year only.—Major ASTOR replied: The statutory authority in the Appropriation Act, embracing the moneys provided by Parliament under Votes of Credit, covers the payments in question, the necessity for which arose from conditions due to the existence of a state of war. As regards the second part of the question, the payments now being made are in respect of the calendar year 1918 only; no undertaking has been given that similar payments will be made in respect of the year 1919, but financial provision for that contingency will be proposed in the Parliamentary Estimates for 1919-20 shortly to be issued.

The Size of Panel Practices.

Sir KINGSLEY WOOD asked the Parliamentary Secretary to the Local Government Board whether he was aware that certain doctors on the insurance panel had over 6000 patients on their panel list and at the same time carry on a private practice; and whether he proposed to take any steps to secure a better provision for medical services to the insured population.—Major ASTOR answered: No, sir; I am not aware of any case in which an insurance practitioner has a list of over 6000 insured persons for whose treatment he is responsible single-handed. If my honourable friend has any such case in mind perhaps he will be good enough to furnish me with particulars. As regards the second part of the question, preliminary discussions with representatives of the medical profession preparatory to a general revision of the conditions of medical services for the insured have been taking place for some time, and careful consideration is being given by the department to the question of bringing about various improvements in those services.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

CUMBERLIDGE, W. I., Capt., R.A.M.C. (T.), has been appointed Honorary Surgeon to the Leicester Royal Infirmary.

DOBRASHIAN, MARGARET, M.B., B.S. Lond., City Pathologist, Nottingham.

FOSTER, A. H., M.R.C.S., L.R.C.P. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Hitchin district.

NUTTALL, W. W., M.D. Durh., Certifying Surgeon under the Factory and Workshop Acts for the Folkestone district.

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Buckinghamshire Hospital.—H.S.

Birmingham University Faculty of Medicine.—Asst. Prof. of Anatomy. £500.

Bodmin, Cornwall County Asylum.—Jun. Asst. M.O. £300.

Bradford Children's Hospital.—H.S. £170.

Bradford Union.—Asst. M.O. £400.

Brighton, Royal Sussex County Hospital.—H.P. £100.

Bristol General Hospital.—Cas. H.S., Obstet. O., and H.S. £175.

Cardiff, King Edward VII.'s Hospital.—H.S. £200.

Carlisle, Cumberland Infirmary.—H.S. and H.P. £250.

Carlisle, Cumberland and Westmorland Asylum, Garlands.—Jun. Asst. M.O. £300.

Chartham, near Canterbury, Kent County Lunatic Asylum.—Med. Superintendent. £800.

Coventry and Warwickshire Hospital.—Res. H.P. £250.

Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £120.

East African Medical Appointments.—M.O. £400-£20-£500.

Guy's Hospital, S.E.—Surg. Radiog. Also Med. Radiog. 50 gs.

Hackney Union Infirmary, Homerton, E.—Jun. Asst. M.O. £250.

Hampshire County Council.—Temp. Asst. M.O.H. £400.

Hospital for Sick Children, Great Ormond-street, W.C.—P.

Huntingdon County Hospital.—Res. M.O. £120.

Manchester, Baguley Sanatorium for Tuberculosis.—First and Second Asst. M.O. £400 and £350.

Manchester, Booth Hall Infirmary for Children, Charlestown-road, Blackley, near Manchester.—Med. Supt. £500. Also Asst. Res. M.O. £250.

Manchester Children's Hospital, Pendlebury, Out-patients' Department, Cartside-street, Manchester.—Asst. M.O. £200.

Manchester Royal Infirmary Convalescent Hospital, Cheadle.—Res. M.O. £300.

Middlesbrough County Borough.—Female M.O. for Maternity and Child Welfare. £350.

Middlesex County Council.—Tuberc. M.O. £600.

Norwich, Norfolk and Norwich Hospital.—H.S. £200. Also Asst. Hon. P.

Nottingham Children's Hospital.—Female Res. H.S. and Res. H.P. and Anæsth. £250 and £200 respectively.

Nottingham City Asylum.—Second Asst. M.O. £300.

Queen Mary's Hospital for the East End, Stratford.—Hon. Gynæcol. and Obstet.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £250.

Salford County Borough.—M.O. for Maternity and Child Welfare £400.

Samaritan Free Hospital for Women, Marylebone-road.—H.S. £150.

Scarborough Hospital and Dispensary.—Two H.S.

Shanghai Municipal Council Health Department.—Asst. Health Officer. £90.0.

Sheffield City Hospital.—Asst. M.O.

Sheffield Royal Infirmary.—Cas. Officer. Also Oph. H.S. £150.

Staffordshire Education Committee.—Female Asst. M. Inspectors. £400.

Stannington, Northumberland, Children's Sanatorium.—Female Res. Doctor.

Stroud General Hospital.—H.S. £250.

Tottenham Maternity and Child-Welfare Committee, Ante-Natal Clinic.—Female M.O. £1 11s. 6d. per session.
Tunbridge Wells General Hospital.—Two H.S.
Union of South Africa Mental Hospital Service.—Six Asst. Phys. £380.
Warwickshire and Coventry Joint Committee for Tuberculosis.—Asst. Tuberc. Officer. £400.
Western Ophthalmic Hospital, Mary'ebone-road, N.W.—Two Asst. S.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £180
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Martock, Bentham, Perranporth, Brynamman, and Denby Dale, Yorks.

Births, Marriages, and Deaths.

BIRTHS.

FLETCHER.—On Feb. 25th, at Oldfield Farm, Maidenhead, the wife of Surgeon E. T. Fletcher, M.B., R.N., of a son.
GREEN.—On Feb. 23th, at The Ferns, Romford, the wife of Charles D. Green, M.D., F.R.C.S., of a daughter.
WOOD.—On March 1st, at Blenheim House, North Berwick, the wife of Captain Percival Wood, R.A.M.C., of a daughter.

MARRIAGES.

ARCHIBALD—CANT.—On March 1st, at Colchester, by Canon Brunwin-Hales, Robert George Archibald, D.S.O., R.A.M.C., to Olive Chapman, only child of Mr. and Mrs. Arthur Cant, of Claremont House, Colchester.
WALLACE—KEENE.—On Feb. 26th, at St. Mary's Church, East Molesey, Surrey, Captain H. K. Wallace, M.D., R.A.M.C., to Alice Freda, youngest daughter of Rev. C. V. P. Keene and Mrs. Keene, of Crosswood, East Molesey.

DEATHS.

CHICK.—On Feb. 26th, at 21, Endsleigh-street, W.C., Dorothy Chick, M.D., B.S., Resident Medical Officer, Marlborough Maternity Section of the Royal Free Hospital, youngest daughter of Samuel and Emma Chick, of Chestergate, Ealing, and Branscombe, Devon, aged 31.
EVANS.—On Feb. 22nd, at The Firs, Lyndhurst, Hants, Colonel Arthur Owen Evans, late I.M.S.
HEMINGWAY.—On Feb. 27th, at Princes-road, Wimbledon, from pneumonia, John Hemingway, M.R.C.S., L.R.C.P. Lond., aged 51.
POLE.—On Feb. 27th, at Oxford, Charles Kingsley Pole, M.B., Ch.B., aged 30.
PRYCE.—On Feb. 21st, at 35 General Hospital, Calais, of broncho-pneumonia, Captain Arthur Meurig Pryce, R.A.M.C., aged 41.
SHARPE.—On St. Chad's Day, at his residence, Marylands, Swanage, from influenza, Cyril Herbert Sharpe, L.R.C.P., L.R.C.S., aged 58 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

MANAGER'S NOTICE.

TO SUBSCRIBERS.

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ADVERTISEMENT RATES.

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Quarter Page, £2. Half a Page, £4. Entire Page, £8.
Special Terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Professor J. A. Lindsay, M.D., has been elected chairman of the board of management of the Royal Victoria Hospital, Belfast, in succession to the late Sir William Crawford.

A MEETING of the Marylebone Division of the British Medical Association will be held on Wednesday, March 12th, at 5 P.M., at the rooms of the Medical Society of London, 11, Chandos-street, W., to discuss the Ministry of Health and the attitude of the medical profession in relation thereto.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, March 13th.—Papers:—Dr. A. D. Waller: Concerning Emotive Phenomena. Part III., The Influence of Drugs upon the Electrical Conductivity of the Palm of the Hand.—Dr. W. L. Balls: The Existence of Daily Growth-Rings in the Cell Wall of Cotton Hairs (communicated by Dr. F. F. Blackman).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
Wednesday, March 12th.
SOCIAL EVENING: at 8.30 P.M.
Dr. Henry Head, F.R.S., will discourse on "Disease and Diagnosis." (Light refreshments and smoking).

MEETINGS OF SECTIONS.
Tuesday, March 11th.
PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 5 P.M.
Paper:
Dr. C. Stanford Read: War Psychiatry.
Thursday, March 13th.
NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, E. G. Fearnsides): at 8.30 P.M.
Paper:
Dr. A. E. Carver: Some Biological Effects due to High Explosives.
Friday, March 14th.
EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, M. Greenwood): at 5.30 P.M.
Paper:
Dr. H. M. Vernon: Industrial Accidents.
Members wishing to dine are requested to communicate with Captain Greenwood, 7, Northumberland-street, W.C. 2, not later than March 12th.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

MEDICAL SOCIETY OF LONDON, 11 Chandos-st., Cavendish-sq., W.
The Lettsomian Lectures by Col. W. H. Willcox, announced to begin on March 10th, have been postponed for a few weeks.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
THURSDAY, March 13th.—5 P.M., Milroy Lectures:—Dr. J. C. McVail: Half a Century of Small-Pox and Vaccination.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Special Eight Weeks' Course of Post-Graduate Instruction. (Details of the Course were given in our issue of Feb. 15th).

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

LONDON HOSPITAL MEDICAL COLLEGE.
A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—
MONDAY, March 10th.—4.30 P.M., Lecture V.:—Dr. Hutchison: Conditions Simulating Dyspepsia.
FRIDAY.—4.30 P.M., Lecture VI.:—Dr. Hutchison: The Differential Diagnosis of Medical from Surgical Dyspepsias.

UNIVERSITY OF LONDON, KING'S COLLEGE, AND KING'S COLLEGE FOR WOMEN.
Course of Six Public Lectures arranged in conjunction with the Imperial Studies Committee of the University on Physiology and National Needs:—
WEDNESDAY, March 12th.—5.30 P.M., Lecture VI.:—Prof. A. Dendy: The Conservation of our Cereal Reserves.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), Governors' Hall, St. Thomas's Hospital, S.E.
A Series of Ten Lectures on Diseases met with in the Sub-tropical War Areas (illustrated with lantern slides, charts, diagrams and microscopical preparations).
WEDNESDAY, March 12th, AND FRIDAY.—5 P.M., Lectures III. and IV.: Dr. L. S. Dudgeon: Malarial Fever.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures and Discussions on Public Health Problems under War and After war Conditions:—
WEDNESDAY, March 12th.—4 P.M., Prof. Sir Thomas Oliver: After-War Reconstruction—Social and Medical.

CHADWICK PUBLIC LECTURES, at the Technical College Hall, Bradford.
THURSDAY, March 13th.—7.30 P.M., Prof. Legge: Industrial Poisoning and its Prevention—II., Aeroplane Manufacturing; Dyes and Dyeing (illustrated by lantern slides).

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
MONDAY, March 10th.—3 P.M., Lecture:—Capt. G. P. Thomson: The Dynamics of Flying.
FRIDAY.—5.30 P.M., Prof. A. Keith: The Organ of Hearing from a New Point of View.

ROYAL SANITARY INSTITUTE, 90, Buckingham Palace-road, S.W.
THURSDAY, March 13th, FRIDAY AND SATURDAY.—10.30 A.M. each day, Conference on Post War Developments relating to Public Health.

Notes, Short Comments, and Answers to Correspondents.

THE VITAL NEED: A THIRD FACTOR.

Professor A. Harden, F.R.S., head of the Biochemical Department of the Lister Institute, delivered on Feb. 26th, at King's College, London, the fourth of a series of lectures on Physiology and National Needs, Scurvy: A Disease Due to the Absence of Vitamines being the subject of his discourse. In the previous lecture Professor F. G. Hopkins enumerated three mysterious substances, of unknown composition, necessary for the continued life of most animals, one of these being the antiscorbutic principle. This principle, Professor Harden said, would form the subject of his own lecture. The absence of this substance both inhibited growth and induced the disease scurvy, long known to be due to defective diet. The British were always a sea-going people, and as soon as voyages came to exceed a period of 1–2 months scurvy made its appearance among the sailors. The records of sixteenth and seventeenth century explorers were full of references to this disease, and fruits and vegetables came to be looked upon as remedial. At the present day adult scurvy was only known in times of war or of famine. Less rare than adult scurvy was infantile scurvy, first differentiated from rickets by Cheadle and Barlow. Recently owing to the shortage of vegetables outbreaks of the disease had occurred both here and in America, in this country particularly after the shortage of potatoes in the spring of 1917. Similar outbreaks had been recorded—e.g., during the potato famine in Ireland (1847) and in Norway (1904). During the American Civil War 30,000 cases of scurvy were reported.

Results of Experimental Investigations.

Little progress had been made in regard to the exact knowledge of the disease until it was experimentally treated in the laboratory. In 1907 the Danes, Holst and Frölich, used guinea-pigs for this purpose, and their work had been followed up in America and in this country at the Lister Institute. Guinea-pigs fed on a diet free from antiscorbutics, consisting, for instance, of oats, bran, and water, or, better still, autoclaved milk, developed scurvy in about three weeks, and died with all the characteristic symptoms of the disease. On adding antiscorbutic substances to the diet the animal, if not too far gone, would recover and grow in a normal manner. The following table was exhibited, showing the relative value of certain foodstuffs against beri-beri and scurvy:—

—	Against beri-beri.	Against scurvy.	—	Against beri-beri.	Against scurvy.
Cereals—			*Fruit juices*—		
Whole wheat ...	++	0	Fresh orange or lemon	...	+++
Wheat germ	+++	0	Commercial lime ...	...	0
Wheat bran	++	0	*Eggs*—Fresh	++	...
White wheat flour	0	0	Dried	++	...
Pulses—			*Meat*—Fresh	+	+
Whole peas or lentils	++	0	Tinned	0	0
Germinated do., do.	++	+++	*Milk*—Fresh	+	+
Vegetables—			Dried	+	0
Fresh cabbage ...	+	+++	Yeast pressed	+++	0
Fresh potatoes, carrots, &c.... ...	+	+	Extract marmite ...	+++	0
Dried (any)	+	0			

It would be seen, therefore, that the green leaves of plants, the tubers of potatoes, and the juices of fruits were the chief source of antiscorbutics. The relative quantities of the antiscorbutic substance contained in various foodstuffs was indicated by some hitherto unpublished work of Dr. Harriette Chick and her colleagues, which showed that taking cabbage as 100, lemon juice came out at 66, orange juice at 33, swede juice at 40, cooked cabbage, germinated lentils, and runner beans at 20, lime juice 10–5, meat juice 5, grape juice less than 5, cooked potato 5, dried cabbage 1–2, and milk 1. The fact that germinating seeds contained the principle was important in providing a supply of the necessary substance where green vegetables were unobtainable.

Prevention and Treatment.

Investigation was hampered, Professor Harden went on, by the fact that the antiscorbutic principle was rendered inactive by heat, and therefore difficult to preserve, a fact which was important because most of our foods were cooked. It was better to cook vegetables at a high temperature for a short period than for a long time at a lower temperature. If stews were the staple diet orange juice should be added to the menu to make good the loss of vitamines. Vegetables dried in the air or otherwise lost a large part of their antiscorbutic principle. Alkalies[1] destroyed the principle and soda should not be added to the water used for boiling vegetables. In monkeys symptoms could be produced closely similar to those of infantile scurvy, and these yielded promptly to lemon juice deprived of its citric acid. Orange juice had a similar effect. Lime and lemon juice were judged aforetime by the amount of acid which they contained. Lemon juice, after removal of free citric acid with chalk, retained its antiscorbutic properties. Beer, it had been suggested, owed its appetising and tonic properties to one or more of the vitamine accessory food factors, but modern beer was totally devoid of any antineuritic or antiscorbutic principle. The effect of scurvy on the bones and teeth of growing animals had been observed by Dr. Zilva and Major Wells, of the Canadian Medical Force. Guinea-pigs fed on an antiscorbutic-free diet might in some instances increase in weight normally, but on post-mortem examination the teeth showed complete destruction of the odontoblastic cells and of the structure of the pulp. Incipient scurvy had been studied by the American observer, Dr. Hess, who found that children fed on different preparations of milk might have scurvy in a subacute or latent form. In sterilising or pasteuring milk there was a danger that its already small antiscorbutic property would be lost altogether, and the same applied to dried milk. Dr. Harriette Chick and Miss M. Rhodes had produced definite evidence[2] that guinea-pigs brought up on dried milk suffered from scurvy. Swede juice could be substituted for orange juice. An advantage of the neutralised lemon juice was that it might be administered in large quantities without causing gastric disturbance.

Dr. Norman Moore, who presided, referred to the prevalence of scurvy in past times, not only on board ship but in ordinary life. A William Clowes, surgeon to St. Bartholomew's and Christ's Hospitals, had reported it to be common amongst the boys at the latter hospital. Dr. Budd, a physician to Christ's Hospital, induced the authorities to put potato upon the regular diet, when presumably scurvy came to an end. Clowes also in his writings mentioned the case of a ship that had started its voyage with a crew of 90 putting into Plymouth with an effective crew of only 28, the others being down with scurvy.

TWO XVII. CENTURY PHYSICIANS.

Mr. G. C. Peachey contributed last year to *Janus*, the organ of the Société Historique des Sciences Médicales, published at Leyden, articles on the two John Peacheys, the seventeenth century physicians. These articles have now been reprinted. The family of Pechey, Peachie, earlier Peche, according to the whim of the family branch or of the individual, belonged to the yeoman class of England, and during the sixteenth century were settled in villages of West Sussex, throughout the Fen district, and in East Anglia. From the Sussex branch was descended John Peachy, Licentiate of the College of Physicians, and through the other branches John Peachie, M.D. Caen, Extra-urbem Licentiate of the College of Physicians. They were not related except through some far distant ancestor. John Peachy, the son of a physician, was baptised at Chichester on Dec. 11th, 1654, and at the age of 17 matriculated at Oxford as a member of New Inn Hall, one of the "nests of Precisans and Puritans," another being Magdalen Hall, of which Sydenham was a member. He graduated B.A. and M.A. respectively in 1675 and 1678, but there is no record of his having taken a degree in medicine. Probably he studied under his father, and afterwards at the hospitals in London. In 1684 he was admitted to the licentiateship of the College of Physicians and practised in the neighbourhood of Cheapside. As the translator of the first English version of the works of Sydenham he is certainly entitled to fame, but it is curious to note that his Collections of Acute Diseases, now an extremely rare work, and his Collection of Chronical Diseases were themselves extracts from Sydenham's writings, and part of them were published in Sydenham's lifetime. It is suggested that Peachy's defence of the great physician and his opinions against the rancour of his opponents might have been reciprocated by Sydenham in giving his tacit consent to the publication of his works in English. Peachy must have been a man of phenomenal industry, for in the dozen years between 1686 and 1698 he published no less than 12 distinct medical works, all with one exception in English, though he was a competent Latin scholar. His fame, however, really rests on his association with Sydenham's works, and possibly his association with Sydenham himself. His independence of thought and action are shown by his courage in defying at the outset of his career the time-honoured tradition that works of medicine should appear in Latin, and by his aggressive attitude towards the College of Physicians in respect of fees and fines, which he refused to pay. He was openly contumacious to the College, and, regardless of professional ethics, he unwarrantably assumed the title of

[1] THE LANCET, 1918, ii., 320. [2] THE LANCET, 1918, ii., 774.

M.D., charged low fees, and did not disdain to advertise. He died in 1718.

John Peachie, M.D. Caen (1632–1692) was born in Lincolnshire, and was descended through a line of clergymen. He was intended for the ministry, and in 1649 he was admitted a sizar at St. John's, Cambridge, but probably did not take a degree. His early years were spent under the stern discipline of Puritanism, and refusing to "conform" he was for 17 years the victim of the persecution of the times. During the plague year he was in prison, but was probably released in order that he might render service to the afflicted and add to the number of the heroic practitioners who remained at their post to fight the foe. Nothing more is heard of him, however, till 1672, when two months after the declaration of indulgence he went to Caen, where he may have taken his degree about 1676, and afterwards in 1679 he published an account of Cassummuniar, "the most proper corrector of the Jesuits Powder rend'ring that medicine safe and harmless." In 1683 he became a Licentiate of the College of Physicians, *extra urbem*. His self-appointed rôle was to minister to the needs of others, and, to use his own words: "If what I have written may tend to the public advantage I have my end; and I could wish that all physicians would so far consult the good of mankind as to communicate what they have singular to the world, and so noble a science might be completed and health be the better preserved and restored."

SUMMER TIME.

SUMMER time will be brought into force this year on the morning of Sunday, March 30th, and will continue until the night of Sunday–Monday, Sept. 28th–29th. It began on March 24th last year and ended on Sept. 29th–30th. In France and Italy summer time began on Feb. 28th.

TOTAL DEATHS FROM WOUNDS IN THE GREAT WAR.

FROM figures compiled by the Chief of Staff of the United States Army it appears that the number of men of all nations killed in battle or who died of wounds during the warfare beginning August, 1914, was 7½ millions. The losses are divided very unequally between the two opposing sides, as Germany, Austria, Turkey, and Bulgaria are credited with 2⅔ million deaths and the eight principal opposing countries with 4½ millions, a proportion of 11:18. Measuring in hundreds of thousands, Russia heads the list with 17, Germany with 16, and France with 13. There follow: Austria, 8; British Empire, 7; Italy, 4½; Turkey, 2½; Belgium, Bulgaria, Rumania, and Serbia (with Montenegro), 1 each; the United States, ½.

CONFERENCE ON INFLUENZA AND ITS PREVENTION.

AT a conference on this subject held at the Institute of Hygiene on Feb. 28th Sir Malcolm Morris, the President, spoke of the remarkable differences of opinion which existed in regard to the prevailing epidemic. He propounded a series of questions which he asked the speakers to answer. Was there any relation between climate and influenza? The disease was rife in England, Australia, India, and America. Was it due to crowds? It attacked individuals in isolated places, and in November the employees of the tubes suffered less than drivers of omnibuses. What was the relation of the common cold to influenza? What was the value of masks? Was alcohol necessary? If so, at what stage of the disease should it be taken? He thought it was necessary neither for prevention nor treatment. What was the value of prophylactic vaccines, especially as regards streptococcic infection? What was the value of the Local Government Board regulations?

The answers given showed the considerable differences of opinion which existed among those present. Sir StClair Thomson said that all who were suffering from the disease should be isolated and required to wear masks or veils when anybody came near them. He was opposed to the use of irritating solutions for washing out the nose. Sir Kingsley Wood said that the steps taken by the Government were of a voluntary educational character. No power existed for ordering the discontinuance of meetings or the closing of schools. If the disease continued to spread he thought disciplinary action should be taken. Dr. Carnegie Dickson drew attention to the existence of carriers among persons with chronic infection of the air-passages. He considered that masks were useful. Prophylactic vaccines did not prevent but determined a milder attack of the disease. Dr. Hector Mackenzie laid stress on the need for improved hygiene of the mouth. Influenza being due to an ultra-microscopic virus, vaccines could hardly protect against the disease itself, but were advisable against complications. The wearing of masks was unpractical, the minute germ readily passing through the finest meshes. Dr. R. Murray Leslie thought vaccines were helpful in warding off complications. Dr. D. C. Kirkhope did not think that the Local Government Board regulations with regard to cinemas were effective. Nurses, he said, required more rest. Alcohol was useful as a stimulant. Dr. Stuart-Low objected to solutions for the nose, and advanced the theory that the poorness of food might have something to do with the epidemic.

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